

**MANUAL OF CLASSIFICATION**  
**OF THE**  
**GERMAN PATENT OFFICE**











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OF THE  
GERMAN PATENT OFFICE

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TRANSLATED BY  
G. A. LOVETT  
ASSISTANT EXAMINER, CLASSIFICATION DIVISION  
U. S. PATENT OFFICE

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## P R E F A C E .

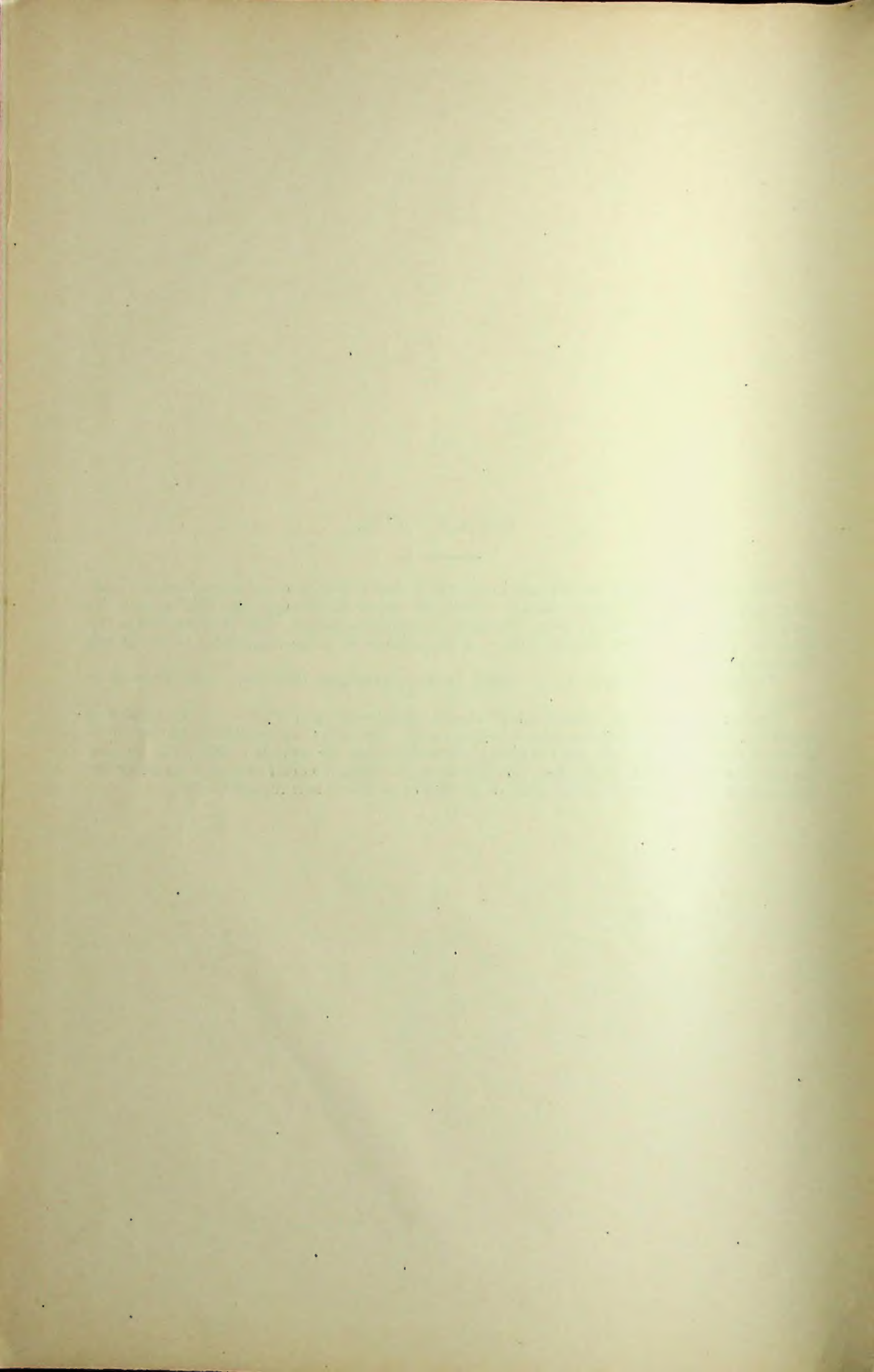
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This translation has been made in the belief that it will be of assistance both in classifying and searching German patents. With the aid of the German classification, and the numerical list of German patents arranged according to groups, which is accessible in the scientific library of the Patent Office, it is possible to make complete searches in the German patents.

Wherever notes have been added by the translator they have been inclosed in brackets.

German patents are classified in classes, subclasses, and groups. A brief index is appended referring to classes and subclasses only. In using the index it should be borne in mind that instruments are classified generally under the nearest related art. In case the name of the thing sought does not appear in the index it should be looked for under the appropriate group titles in the class of invention to which it is related in use.







# MANUAL OF CLASSIFICATION OF THE GERMAN PATENT OFFICE.

## CLASS 1.—DRESSING OF ORES AND FUELS. (Disintegrating Apparatus Class 50c.)

### 1a. Dressing (exclusive of magnetic and electric, for which see 1b).

#### Jigs. (Gr. 1-5.)

1. Jigs in general.
2. Driving devices for jigs.
3. Discharge devices for jigs.
4. Percussion jigs. [Oscillating screen.]
5. Rotary jigs.

#### HYDRAULIC CURRENT APPARATUS FOR DRESSING AND SLIME WASHING; WASHING AND DRYING OF ORE AND COAL. (Gr. 6-11.)

6. Hydraulic apparatus for dressing with horizontal current.
7. Same, with ascending current.
8. Slime dressing apparatus. (Slime apparatus for clay, 80a, 5.)
9. Drying of ore and coal slimes in general. (Cf. 10c, 6-8; 82a; 82b.)
10. Coal draining towers. (Coal drying towers.)
11. Ore, sand, and coal washers.

#### ORE DRESSING TABLES. [Buddles.] (Gr. 12-14.)

12. Sweep tables. [Bumping tables.]
13. Dressing tables with endless belts. (Plates.)
14. Round buddles.

#### GRATES AND SCREENS FOR DRESSING. (Gr. 15-21.) (Cf. 45e, 12-20; 50d.)

15. Bar screens for dressing ores and fuels.
16. Roller grates for dressing ores and fuels.
17. Fixed screens for dressing ores and fuels.
18. Movable screens in general for dressing ores and fuels.
19. Shaking screens for dressing ores and fuels.
20. Endless and rotary screens for dressing ores and fuels.
21. Cylindrical screens for dressing ores and fuels. [Trommels.]
22. Dressing by air blasts. (Cf. 50d, 7-10.)
23. Centrifugal machines for ores and fuels. (Cf. 82b, Centrifugal machines.)
24. Dressing processes for ores in which immediately separable products are obtained by disintegrating (also loosening by chemical means, roasting, etc.).
25. Dressing by means of oils, also of graphite.
26. Dressing by means of gas-evolving liquids. (Acids.)
27. Charging mechanism for dressing apparatus.
28. Dressing in conveyer troughs. (Simultaneous conveying and screening.) (Cf. 45e, 12-20; 81e, 1-5, 14-18.)
29. Sorting and conveying belts and picking tables for dressing. (Cf. 81e, 1-5, 14-18.)
30. Miscellaneous apparatus and processes for dressing not included in gr. 1-29, also separation of coal and slate (except by jigs).
31. Dressing of refuse. (Cf. 10b, 16; 16.)

### 1b. Magnetic and Electric Dressing.

1. Magnetic dressing apparatus in general.
2. Processes for magnetic dressing, also special roasting processes for preparing ores for magnetic dressing. (Cf. 18a, 1; 40a, 2.)
3. Magnetic separation of materials with freely falling ore.
4. Separation of materials by means of magnetic drums, rollers, bells, etc.
5. Magnetic separation by means of endless belts movable over magnets.
6. Electric dressing of ores and other materials.

## CLASS 2.—BAKING.

### 2a. Bakers' Ovens, Including Lighting Features, Bakers' Machines and Implements.

#### BAKERS' OVENS, STRUCTURE AND ARRANGEMENT, WITH EXCEPTION OF DISPOSAL OF THE SMOKE. (See 24a.) (Gr. 1-11.)

1. Bakers' ovens with grates and interior heating arrangements. (Cf. 24a, 13.)
2. Bakers' ovens to be heated by gas, steam, or air.
3. Bakers' ovens with removable hearth plates.
4. Bakers' ovens with movable hearths.
5. Bakers' ovens with circularly movable hearth plates.
6. Portable bakers' ovens.
7. Heat regulation in ovens by drafts.
8. Lighting of ovens. (Cf. 4a, 45.)
9. Hearth charging apparatus.
10. Parts for equipment of bakers' ovens.
11. Devices for bakers' ovens in general, not included in gr. 1-10.

#### MACHINES AND IMPLEMENTS FOR BAKING. (Gr. 12-15.)

12. Machines for baking hollow articles, pastry, biscuit, waffles, etc.
13. Bakers' molds [tins, etc.].
14. Baking implements.
15. Miscellaneous appliances for baking, exclusive of 12-14.

### 2b. Machines and Implements for Making and Working Dough, Including Zwieback and Noodle-Cutting Machines and Implements.

#### DOUGH MAKING. (Gr. 1-6.)

1. Dough kneading and mixing machines in which the support for the kneading and mixing apparatus is outside the dough trough.
2. Dough kneading and mixing machines in which the support for the kneading and mixing apparatus is inside the dough trough.
3. Dough kneading and mixing machines with rollers.
4. Dough kneading and mixing machines with screws.
5. Mechanical dough manufacture directly from grain. (Cf. 2c, 1.)
6. Appliances for kneading and mixing machines in general not included in gr. 1-5.



## 2b—Continued.

## DOUGH WORKING. (Gr. 7-14.)

7. Machines and implements for molding dough.
8. Dough-cutting machines in general.
9. Dough-cutting machines with plungers and knives passing through the plungers.
10. Devices for stamping and cutting out dough.
11. Devices for crimping dough [notching, indenting, etc.].
12. Dough presses.
13. Noodle and macaroni manufacture.
14. Miscellaneous implements for dough working, not included in gr. 7-13.

## HANDLING BAKED GOODS. (Gr. 15-16.)

15. Machines for cutting zwieback and the like.
16. Apparatus and implements for handling baked goods in general (except gr. 15). (Cf. 34b, 2 and 6, for bread and cake cutting machines.)

## 2c. Processes for Preparing Dough and for Baking, also Baking Powder.

1. Processes for making bread, zwieback, and biscuit; also for preparing dough. (Baked goods from flours of all kinds, also baked goods with addition of albuminous flours, e. g., vegetable albumen. Cf. 53k, 2.) (Machines and implements for making biscuit, 2a, 12-14; mechanical dough making, 2b, 1-6.)
2. Baking powder.
3. Dredging means for baking purposes.

## CLASS 3.—APPAREL (exclusive of hats, class 41, needlework and embroidery, class 52, and shoes, class 71).

## 3a. Linen and Paper Articles of Apparel, Underclothes and Corsets.

## BODY LINEN. (Gr. 1-7.)

1. Shirts, shirt closures, and shields.
2. Napkins [or swaddling clothes], bibs, and swaddling pads.
3. Shirt fronts (including those of paper) and their fastenings.
4. Collars (including those of paper), holders and fasteners therefor. (Cf. 3b, 12, 15, and 16; collar-buttons, 44a, 15.)
5. Cuffs (including those of paper). (Cf. gr. 6.)
6. Cuff holders and shields. (Cf. gr. 5.)
7. Machines and implements for making linen wear.

## UNDERWEAR AND HOSIERY. (So far as not included in class 25 or class 86.) (Gr. 8-12.)

8. Underwear. (Drawers and vests.)
9. Materials for underwear.
10. Hosiery and appurtenances. (Cf. 30d, 19.)
11. Hose supporters and garters.
12. Bustles, hoop skirts, bust, hip, and shoulder pads.

## STAYS OR CORSETS AND ACCESSORIES. (Gr. 13-17.)

13. Corsets. (Cf. 3c, 5.)
14. Bust supporters, bodices, and girdles for lacing. (Cf. Girdles for treatment of the sick, 30d, 13.)
15. Parts attached to the corset.
16. Corset steels or stays in general. (Manufacture of stays from wire, 7d, 15.)
17. Corset machines.

## 3b. Articles of Apparel Including Suspenders, Cravats, Gloves, and Hat Holders Fastened to the Hat; also Trimmings and Materials for Articles of Apparel (so far as not included in class 86 and class 25).

## ARTICLES OF APPAREL AND ACCESSORIES. (Gr. 1-13.)

1. Materials (waterproof and ventilated).
2. Linings (trimmings, pockets, armholes, stiffening inserts). (Cf. Corset stays, 3a, 16.)
3. Storm coats, traveling rugs. (Cf. 33d; 34f.)
4. Protective clothing (including that for use in motor vehicles), and bullet-proof clothing. (Cf. 72g, 1.)
5. Coats, waistcoats, and trousers, including those for outdoor sports, bathing suits.
6. Uniforms and attachments. (Military equipment, 33d.)
7. Dress shields and machines for their manufacture.
8. Capes and aprons.
9. Clothing hangers and hooks. (Those with locking devices, 68a, 107.)
10. Gloves and glove-makers' implements. (Cf. 3c, 6.)
11. Gaiters. (Cf. 3c, 7.)
12. Cloth collars and collar shields. (Cf. gr. 6; 3a, 4.)
13. Ear warmers.

## CRAVATS AND ACCESSORIES. (Gr. 14-16.)

14. Cravats. (Cf. Gr. 15-16.)
15. Cravat closures.
16. Cravat holders and fasteners. (Cf. 44a, 15.)

## DEVICES FOR SUPPORTING, FASTENING, AND PROTECTING CLOTHING. (Gr. 17-24.)

17. Suspenders.
18. Coat supporters and blouse holders.
19. Coat and dress lifters.
20. Protective fastenings for trousers, protectors [knee leathers, spats], and shields.
21. Garment edgings [bindings, piping]. (Trimmings, gr. 2.)
22. Belts and belt parts. (Cf. 3c, 8.)
23. Coat and trouser bands [waistbands].
24. Straps for trousers.

## HEAD COVERINGS FOR LADIES AND CHILDREN (in so far as not comprised under hat making), INCLUDING THOSE FOR BATHING PURPOSES, AND ACCESSORIES. (Gr. 25-26.) (Caps, 41c, 2.)

25. Holders for ladies' hats, ladies' head coverings, hoods, bathing caps and hoods. (Cf. 41c.)
26. Veils and veil fasteners.

## 3c. Apparel Fasteners. (Cord fasteners, 71b.)

1. Dress hooks and eyes. (Cf. gr. 3; their manufacture from wire, 7d, 14; manufacture of eyelets from sheet metal, 7c, 45.)
2. Dress clasps in general. (Cf. gr. 6; making, 7c, 29.)
3. Buttonholes and eyelets for buttonholes.
4. Pocket fasteners. (Cf. 33b, 11-12.)
5. Corset fasteners. (Cf. 3a, 13; 71b, 1-8, manufacture from sheet metal, 7c, 45; from wire, 7d, 14.)
6. Glove fasteners. (Cf. 3b, 10.)
7. Gaiter fasteners. (Cf. 3b, 11.)
8. Belt fasteners. (Cf. 44a, 27-30; 47d, 9; 56a, 2.)
9. Miscellaneous fasteners for clothing not included in gr. 1-8. (Cf. 71b, 1-4.)
10. Machines and implements for punching and for setting eyelets. (Cf. 71c, 60-61.)



**3d. Apparatus for Use in Tailoring.** (For sewing implements cf. 52a, 58.)

1. Rulers, stands, and similar aids to tailoring. (Cf. 42a, 15; 70e, 8.)
2. Forms and the like for measuring and marking out patterns.
3. Dress forms (bust forms and lay figures).
4. Copying and designing patterns; also processes of reproducing the human form for use in apparel manufacture.
5. Apparatus for cutting out garments. (Cf. 8f, 10.)
6. Ironing [pressing] apparatus for tailors. (Cf. 8d, 21.)
7. Miscellaneous aids for tailoring not included in gr. 1-6, e. g. marking wheels, apparatus for laying off garments, cutting tables, etc.

**3e. Flowers, Feathers, Furs.** (Clipping machines, class 28b), **Wigs and Masks.**

1. Artificial flowers and garlands and their manufacture. (Cf. 75f, 28.)
2. Processes and apparatus for making wigs; processes and apparatus for straightening tangled hair. Masks as articles of apparel. (Masks, cf. 30d, 27; 30k, 14; 61a, 19; 66a, 2; 77a, 23; 77f, 31; 77g, 6.)
3. Feathers for ornament or clothing, and machines and implements for handling feathers. (Cf. gr. 4.)
4. Artificial feathers (substitutes for feathers), and their manufacture.
5. Furs (ordinary). (Cf. gr. 6.)
6. Artificial furs of feathers, hair, wool, and the like, and their manufacture; also implements for working with natural or artificial fur.

**CLASS 4.—ILLUMINATION** (exclusive of electric lighting, class 21f), **AND BURNERS OF ALL KINDS.****4a. Lanterns, Mine Lamps, Candlesticks** (Christmas-tree candlesticks, class 34l), **Torches, Lamp Attachments** (burners, 4g), **and Holders for Illuminating Bodies.****LAMP STANDS.** (Gr. 1-3.)

1. Interior arrangement of lamp stands.
2. Filling devices and oil gauges on lamp stands. (Cf. 34l, 20; 64c, 44; 81c, 38.)
3. Combinations of lamp stands with other lamp parts.

**WICKS AND ACCESSORIES.** (Gr. 4-7.)

4. Fabric wicks.
5. Mineral wicks.
6. Combined fabric and mineral wicks.
7. Wick trimmers.

**FUEL FEEDING IN LAMPS.** (Gr. 8-10.)

8. Fuel feeding in lamps by hydrostatic or weight pressure.
9. Fuel feeding in lamps by compressed gases.
10. Regulation of fuel feeding in lamps by floats, inverted fonts (barometric), etc. (Cf. 4g, 27.)

**LAMP CHIMNEYS AND GLOBES, AND ACCESSORIES.** (Gr. 11-16.)

11. Lamp chimneys in general.
12. Composite lamp chimneys.
13. Preliminary heating chimneys.

**4a—Continued.**

14. Lamp globes.
15. Smoke bells for lamps.
16. Draft regulators and wind protectors for lamps.

**FASTENING AND SECURING LAMP CHIMNEYS, GLOBES, AND INCANDESCENT BODIES.** (Gr. 17-23.)

17. Lamp-chimney supports.
18. Lamp-globe supports and exterior lamp housings.
19. Hoisting devices for the chimney gallery of lamps.
20. Protecting devices for incandescent illuminating bodies. [Mantles.]
21. Mantle fastenings when fitted to the lamp. (Cf. 4f, 4.)
22. Shock-absorbing devices for burners. [Resilient supports.]
23. Shock-absorbing devices for lamps. [Resilient supports.]

**HOLDERS AND HANGING DEVICES FOR LAMPS.** (Gr. 24-31.) (Cf. 21f, 57-61.)

24. Fastening and adjusting devices for stand lamps. (Cf. gr. 26, 49.)
25. Holders, fastening and adjusting devices for hanging lamps exclusive of hoisting mechanism. (Cf. gr. 27-31.)
26. Wall brackets for lamps. (Cf. 63b, 4.)
27. Friction hoists, especially telescopic, for lamps.
28. Counterweight hoists for lamps.
29. Spring hoists for lamps.
30. Lever hoists for lamps.
31. Rope hoists for lamps.

**CANDLESTICKS AND APPURTENANCES, NIGHT LAMPS, TORCHES, MAGNESIUM LAMPS.** (Gr. 32-37.)

32. Candlesticks and candleholders, including those for miners' use.
33. Candle sockets.
34. Drip catchers and shade holders for candles.
35. Night lamps, small lamps, and the like.
36. Torches.
37. Magnesium lamps.

**LANTERNS.** (Gr. 38-53.)

38. Lanterns with replaceable wells.
39. Carriage lamps.
40. Bicycle lamps.
41. Traveling and pocket lanterns.
42. Means for lifting and fastening the chimney in storm and hand lanterns.
43. Air-feeding devices for storm and hand lanterns.
44. Elements of storm and hand lanterns.
45. Wind-proof torches, bakers' oven and firemen's lanterns. (Cf. 2a, 8.)
46. Street lamps.
47. Signal lamps and dark lanterns. (Cf. 74d, 9.)
48. Headlights for locomotives, boats, and carriages (so far as the general structure of the lantern is concerned). (Cf. 20i, 24.)
49. Holders and hangers for lanterns. (Cf. gr. 24.)
50. Open mine lamps. (Cf. gr. 32.)
51. Elements of mine lamps, except closures.
52. Magnetic closures for mine lamps.
53. Mechanical closures for mine lamps.

**4b. Means for Intensifying and Distributing Light.****LAMP SHADES.** (Gr. 1-3.)

1. Manufacture of and materials for shades.
2. Shades with cooling devices.
3. Lamp-shade stands.



## 4b—Continued.

REFLECTORS. (Gr. 4-11.) (For electric incandescent lamps, 21f, 53-56.)

4. Reflecting lamp shades, globes, and chimneys.
5. Forms of reflectors. Hollow glass reflectors.
6. Reflectors with cooling devices.
7. Arrangement of reflectors on burners, on lamps and in lanterns.
8. Adjustable shades and reflectors for lamps and lanterns.
9. Reflectors for indirect lighting.
10. Daylight reflectors.
11. Projectors and searchlights. (Cf. gr. 21, also electric, 21f, 10; and optical parts, 42h, 9.)

SUPPORTS FOR LAMP SHADES AND REFLECTORS. (Gr. 12-14.)

12. Lamp chimneys or globes formed as shade or reflector supports.
13. Fastening devices for shades and reflectors on electric incandescent lamps.
14. Hanging and fastening of reflector and shade supports on burners and lamps.

REFRACTORS. (Gr. 15-16.)

15. Refracting glass screens for lamps.
16. Prism plates for overhead lighting.

ILLUMINATION DEVICES. (Gr. 17-21.)

17. Glass screens for producing colored-light effects.
18. Glass screens for advertising purposes, lighting of shields and the like.
19. Chinese lanterns and other lanterns for illumination.
20. Fountain lighting.
21. Projectors for producing colored-light effects. (Cf. gr. 11.)
22. Stage lighting. (Cf. 77g, 2.)
23. Show-window [or show case] lighting.
24. Desk lighting.

4c. Gas Holders. (Construction, class 37f.) Pressure and Consumption Regulators for lighting purposes. Pressure Regulators so far as They May be Applied to Lighting Purposes as well as for Gas Engines (gas-pressure regulators for gas engines, class 46c). Circulation Governors for Gas Plants (other circulation regulators, class 26a). Conducting and Distributing Gaseous Fuels, Mixing Devices for mixing gas and air, etc. (Gas mixers, class 26c). Plants for Producing Pressure Gas.

GAS CUT-OFF DEVICES. (Gas cocks and valves and appurtenances.) (Gr. 1-14.)

1. Gas cocks with stationary plugs.
2. Multiple-way gas cocks.
3. Devices for regulating the end position in gas cocks.
4. Small adjustment gas cocks. [Adjustable to give small flame, as for night lights.]
5. Operating devices for gas cocks.
6. Gas cut-off devices in general.
7. Cut-off devices held in open position by the gas pressure.
8. Cut-off devices operating upon the extinction of the flame.
9. Devices for fastening gas cocks and valves in open or closed position.
10. Safety cocks and valves which require the heating of an expansion body to hold the valve in the open position.

## 4c—Continued.

11. Safety cocks and valves in which a previous heating of an expansion body is not necessary to maintain the open position.
12. Safety cocks and valves which automatically close after a certain time if not prevented by the expansion body.
13. Gas cut-off devices which automatically close the conduit.
14. Alarm devices on gas conduits.

DISTRIBUTION OF GAS IN CONDUITS. (Gr. 15-22.)

15. Couplings for gas pipes.
16. Contrivances for purifying the gas in gas pipes.
17. Gas water traps; dust traps for gas conduits.
18. Devices for arresting explosions in gas pipes (check valves).
19. Leak detectors and pressure gauges for gas pipes.
20. Devices for preventing variations in pressure in gas pipes. (Antifluatuators.)
21. Devices for preventing freezing in gas pipes.
22. Cut-off devices for gas mains.

GAS CONSUMPTION REGULATORS. (Gr. 23-26.)

23. Regulators adjustable by hand. Throttling devices.
24. Automatic regulators with float valves, swing valves, or other valves.
25. Regulators with control valves in which the float is placed in advance of the controlled aperture.
26. Regulators with control valves in which the float is placed behind the controlled aperture.

GAS PRESSURE REGULATORS. (Gr. 27-32.)

27. Diaphragm regulators
28. Bell gas pressure regulators in general. (Valve construction, bell guides, etc.) Miscellaneous gas pressure regulators.
29. Bell gas pressure regulators with automatic loading and unloading of the ballast of the regulator bell during ascent and descent because of varying consumption of gas.
30. Bell gas pressure regulators arranged to equalize varying pressure.
31. Bell gas pressure regulators arranged to equalize varying pressure and with automatic ballasting in changing the position of the bell.
32. Float gas pressure regulators.

GAS HOLDERS. (Gr. 33-38.)

33. Gas holders in general (structural arrangement, bell guides, 37f, 3).
34. Portable gas holders.
35. Gas holders without liquid seals.
36. Devices for regulating the inflow and outflow of gas.
37. Safety devices for gas holders. (Escape of the excess gas, etc.)
38. Telescopic gas holders. Heating devices for the liquid seals.

PRESSURE-GAS PRODUCERS AND GAS MIXERS. (Gr. 39-45.)

39. Pressure-gas producers set in operation by the heat of the flame or by electrical means.
40. Pressure-gas producers with return pipe circuit. [Flow of gas around and into compressor again.] Circulation regulators for pressure-gas plants.
41. Pressure-gas producers driven by water motors or reciprocating motors.
42. Pressure-gas producers with water-jet blowers.



## 4c—Continued.

43. Pressure-gas plants of various systems.
44. Apparatus for mixing and conveying gas and air by gas-meter drums. (Cf. 12e, 4; 26c, 7.)
45. Pumps and other conveying devices for mixing and forcing gas and air into the pipe or reservoir. Mixture regulators.

## 4d. Lighters and Extinguishers, Including Electric, so far as They Do Not Involve Switch Construction (otherwise in class 21c).

## ARRANGEMENT OF CATALYTIC GAS LIGHTERS ON GAS LAMPS, ETC. (Gr. 1-3.) (Catalytic lighters and their manufacture in 4c.)

1. Mounting of catalytic gas lighters on burners.
2. Mounting of catalytic gas lighters on chimneys.
3. Mounting of catalytic gas lighters on a lighting staff or the like

4. Gas lighters with friction or impact operation, including those combined with the gas cock. (Fulminating metals and alloys, 78f.)
5. Portable lighters with liquid (or gas) containers.

## LIGHTING FLAMES AND THEIR PRODUCTION. (Gr. 6-8.)

6. Lighting flames for upright burners. (Cf. gr. 16.)
7. Lighting flames for inverted burners. (Cf. gr. 16.)
8. Gas lighting cocks with pilot flames. (Cf. gr. 16; small adjustment gas cocks, 4c, 4.)

## MECHANICAL GAS LIGHTING FROM A DISTANCE. (Gr. 9-10.)

9. Gas lighters and extinguishers operating through change of pressure without cutting off the fluid; also hydraulic or pneumatic means for adjusting the burner closure from a distance.
10. Gas lighters and extinguishers operating through change of pressure with fluid cut-off.

## 11. Thermostatic gas lighting and extinguishing devices.

## ELECTRIC GAS LIGHTERS. (Gr. 12-15.)

12. Electric hand lighters for gas burners.
13. Portable electric lighters.
14. Electric lighters operated from a distance.
15. Electric gas cock or valve openers operated from a distance.

16. Lighting devices for street gas lamps.
17. Opening and closing cocks and valves of gas lamps at predetermined times by means of clockwork and intermediate gearing; automatic cut-off devices for gas lamps for time-controlled stairway lighting, and the like (the turning on and off of any desired motive power by means of clockwork, etc., 47h, 20; gas cut-off devices which automatically close the conduit, 4c, 13).

## LIGHTING DEVICES FOR OIL LAMPS, LANTERNS, AND CANDLES. (Gr. 18-20.)

18. Mechanical lighting devices for oil lamps, lanterns, and candles, not including mine lamps.
19. Mechanical lighting devices for safety (mine) lamps.
20. Electric lighting devices for oil (also mine) lamps, candles, etc.

## 4d—Continued.

## EXTINGUISHING DEVICES FOR OIL LAMPS, LANTERNS, HEATING OR COOKING BURNERS, AND CANDLES. (Gr. 21-27.)

21. Mechanical burner-disk extinguishers for oil lamps.
22. Mechanical leaf [flap] extinguishers for oil lamps.
23. Mechanical sleeve extinguishers for oil lamps.
24. Devices for blowing out oil lamps, lanterns, or candles.
25. Automatic extinguishers for safety (mine) lamps. (Cf. gr. 26.)
26. Automatic extinguishers for oil burners, lamps, and heating or cooking burners, acting in case of accident. (Cf. gr. 25.)
27. Candle snuffers.

## 28. Miscellaneous lighting and extinguishing mechanism for lighting apparatus.

## 4e. Automatic Gas Lighters. (Catalytic.)

(Arrangement of such on gas lamps, etc., 4d, 1-3.) (Fulminating alloys and metals, 78f.)

1. Chemical manufacture of automatic gas lighters.
2. Mechanical manufacture of and fittings for gas lighters.
3. Automatic lighting of incandescent bodies [mantles].

## 4f. Incandescent Bodies.

1. Mantles. (Fabrics and impregnating liquids for same.)
2. Mantles with different zones.
3. Metallic fabric, lime pencil, and other solid incandescent bodies.
4. Supporting devices for incandescent bodies (special formation and preparation of the mantle head, or the holder, and adaptation to the incandescent body). (Cf. 4a, 21.)
5. Preparation of mantles (drying, forming, burning off, stiffening, collodionizing, cutting); devices for putting on and removing mantles; packing, so far as the arrangement of the mantle is affected (otherwise 81c, 27); strength testers.

## 4g. Burners, including those for heating and cooking purposes, and vaporizers for liquid fuels, so far as they are combined with a burner (automatic vaporizers for liquid fuels, class 24b, 26a, 26c, vaporizers which form part of a motor, class 46c); arrangement of the burner in the lamp, and combinations of the burner with other lamp parts for improving the working of the burner.

## WICK-LIGHT BURNERS (without incandescent bodies). (Gr. 1-4.)

1. Air feeding for wick-light burners.
2. Wick-light burners without burner caps, with flat, round, or filled wicks.
3. Wick-light burners with burner caps.
4. Downwardly directed wick-light burners, light burners for railway-car lamps, regenerative burners.

5. Alcohol wick burners for heating purposes.
6. Petroleum wick burners for heating purposes.

7. Pan burners.
8. Tray [trough] burners.



## 4g—Continued.

## WICK BLUE-FLAME BURNERS. (Gr. 9-14.)

9. Elements of wick blue-flame burners.
10. Wick blue-flame burners with wick burning above, without burner disk (or burner cap).
11. Wick blue-flame burners with wick burning above, with burner disk (or burner cap), and without wick tube flange.
12. Wick blue-flame burners with wick burning above, with burner disk (or burner cap) and with wick tube flange.
13. Wick blue-flame burners with wick burning at the side, without wick tube flange.
14. Wick blue-flame burners with wick burning at the side, with wick tube flange.

## ARRANGEMENT OF THE WICK IN THE BURNER. (Gr. 15-20.)

15. Wick sleeves.
16. Safety wick sleeves.
17. Wick adjusters taking hold of the wick.
18. Wick adjusters taking hold of the wick holder.
19. Devices for fastening the wick in position and limiting its movements.
20. Wick inserters.

21. Smouldering burners. [Sub-jet, or auxiliary heating burners.]
22. Air-gas burners. [Air-gas is air enriched with combustible vapors.]

## PARTS OF VAPOR BURNERS. (Gr. 23-27.) (Cf. gr. 28-36.)

23. Vaporizers for vapor burners.
24. Nozzles for vapor burners and cleaning devices for nozzles.
25. Mixing tubes, and burner heads for vapor burners.
26. Heating devices for vapor burners.
27. Regulating devices in vaporizers for the feeding of fuel to vapor burners. (Cf. 4a, 10.)

## VAPOR BURNERS. (Gr. 28-36.) (Cf. gr. 23-27.)

28. Vapor light burners.
29. Vapor burners for soldering lamps. (Cf. 49f, 13.)
30. Alcohol vapor burners for heating.
31. Vapor burners for heating, the generator heated by auxiliary flame.
32. Vapor burners for heating, the generator exposed to main flame.
33. Vapor burners for heating, the generator heated by conduction.
34. Vapor incandescent burners, the generator heated by auxiliary flame.
35. Vapor incandescent burners, the generator exposed to main flame.
36. Vapor incandescent burners, the generator heated by conduction.

37. Processes for lighting and heating with burners for liquid fuels. (Cf. 24b, 7.)

## GAS-LIGHTING BURNERS. (Gr. 38-42.)

38. Split [bats-wing] gas burners.
39. Argand gas burners.
40. Gas burners for regenerative lamps.
41. Gas burners for overhead and railway car lamps.
42. Acetylene gas burners.

## 4g—Continued.

## BLUE-FLAME GAS BURNERS. (Gr. 43-54.)

43. Burners for compressed gas and air.
44. Oxyhydrogen burners, blast-lamp burners (including those for soldering, welding, and cutting metals.)
45. Lime light and zirconium light burners.
46. Blue-flame gas burner nozzles (nozzle structure, cleaning, regulating nozzles).
47. Regulating the feeding of air in incandescent gas burners.
48. Incandescent gas light burner mixing tubes.
49. Incandescent gas light burners in which the air or gas is pre-heated in the burner.
50. Incandescent gas light burner heads.
51. Gas heating burner mixing tubes, control of air supply.
52. Gas heating burner heads, preliminary air heating.
53. Group incandescent gas light burners.
54. Inverted incandescent gas light burners; inverted incandescent gas lamps, (Cf. 4a, 11-18.)

55. Processes of lighting and heating with burners for gaseous fuels.

## CLASS 5.—MINING.

## 5a. Deep Boring.

1. Drilling apparatus with walking beams.
2. Drilling apparatus without walking beams.
3. Drills and bits. (Cf. 5b, 7.)
4. Other tools for drilling not included in gr. 1-3.

5b. Extraction of Minerals. (Blasting, class 78e.)  
Rock-Drilling Machines. (Gr. 1-8.)

1. Rotary rock drills with driving mechanism employing air, water, or the like. (Cf. 14d, 14-19; 87b, 2.)
2. Rotary rock drills with hand operated driving mechanism.
3. Rotary rock drills with electric driving mechanism.
4. Reciprocating rock drills with driving mechanism employing air or the like. (Cf. 14d, 14-19; 87b, 2.)
5. Reciprocating rock drills with hand operated or electric driving mechanism.
6. Hammer drilling machines for mining purposes.
7. Drills, drill heads, drill fastenings and accessories for mining purposes. (Cf. 5a, 3.)
8. Boring frames and drill props for mining purposes.

9. Coal-cutting and channeling machines for extracting minerals.
10. Means for splitting off and breaking down rock, including the use of liquids or gases.
11. Other tools for extraction of materials in mining not included in gr. 1-10. (Tunnel structure in mining, 19f, 1; excavators, 84d.)
12. Various inventions for extraction of materials in mining not included in gr. 1-11, including mine working apparatus and processes, working out veins by removal of gas, extraction of petroleum.
13. Washers for rock drilling machines. Bore-dust removal by means of water or air, or water and air. (Cf. 5c, 1, 3; hydraulic sinking of piles, 84c, 2.)
14. Feed mechanism for rock drills. (Spindle feed and piston feed.)
15. Swinging mechanism for rock drilling and cutting machines.



**5c. Shaft and Gallery Working, Mine Timbering.**

1. Shaft sinking and working of the usual kind. (Cf. 84c, 3.)
2. Shaft sinking by the freezing process.
3. Shaft boring and borers. (Cf. 5a, 5b.)
4. Gallery and shaft lining and timbering, also mine stanchions. (Braces, 37e, 13.)

**5d. Ventilating, Mine Hauling (also classes 20 and 35), Mine Surveying (also class 42c), etc.**

1. Ventilation conduits and air dams. (Cf. 84a, 4.)
2. Air doors and checks for ventilating purposes.
3. Ventilation in general.
4. Hauling frames or cages and accessories for mining. (Cf. 35a, 11.)
5. Underground hauling and inclined plane hoists.
6. Closures for shafts and inclined plane hoists. (Cf. 35a, 18.)
7. Dumping apparatus, mine cars, etc., for mine working.
8. Surveying and signal arrangements for mine working. (Cf. 42c, 11.)
9. Miscellaneous contrivances for mine working. (Supplying water, stowage of waste, etc.) (Cf. 81e, 18.)

**CLASS 6.—BEER, SPIRITS, WINE, VINEGAR, YEAST.****6a. Malt, Hops, Yeast.****MALT. (Gr. 1-10.)**

1. Steeping and washing barley for preparation of malt.
2. Malting processes and control devices [registering mechanism] for malting purposes.
3. Arrangements for floor malting.
4. Drum malting.
5. Box malting.
6. Fixed malt kilns.
7. Movable malt kilns.
8. Malt turners.
9. Malt cleaning apparatus.
10. Miscellaneous, e. g., germinating vessels, and ventilating contrivances.

**HOPS. (Gr. 11-13.)**

11. Hop driers. (Cf. 6a, 6-7; 82a, 2.)
12. Hop containers.
13. Hop preserving and the like.

**YEAST. (Gr. 14-19.) (Cf. 6b, 3 and 14-16.)**

14. Preparation of bub. (Cf. gr. 18.)
15. Preparation of pressed yeast.
16. Obtaining pure cultures of yeast.
17. Yeast propagating apparatus.
18. Preserving yeast.
19. Yeast manipulation [washing, etc.].

**6b. Mash and Wort, Preparation and Fermentation; Distilling and Rectifying Alcoholic Liquors.****PREPARATION OF MASH. (Cf. especially gr. 3.) (Gr. 1-7.)**

1. Preliminary treatment of raw materials for making mash.
2. Steaming of raw materials for making mash.
3. Processes of saccharification and mashing for distilling purposes as well as for preparation of yeast. (Cf. gr. 11.)

**6b—Continued.**

4. Distillery mashing apparatus with horizontal stirrer shafts.
5. Distillery mashing apparatus with vertical stirrer shafts.
6. Distillery mashing apparatus of special forms, exclusive of gr. 4-5.
7. Dehulling apparatus for distillery mash.

**PREPARATION OF WORT FOR MAKING BEER. (Gr. 8-15.)**

8. Brewing processes in general.
9. Foremashing apparatus for brewing.
10. Machines for stirring mash and removing waste grains.
11. Processes and apparatus for extracting wort. (Cf. gr. 8.)
12. Steam heated brewing kettles and appurtenances.
13. Brewing kettles for direct fire heating and appurtenances.
14. Preparation of beer wort (treatment with hops, also hop extraction and the like).
15. Cooling vats and the like for beer wort. (Cf. 17f.)

**FERMENTATION OF DISTILLERY MASH, YEAST MASH, AND BEER WORT. (Gr. 16-19.)**

16. Fermentation processes and the like for distilling, yeast preparation, and brewing. (The same for wine and the like, 6c, 1.)
17. Fermenting vats and appurtenances for distilling, yeast preparation, and brewing.
18. Fermenting vat coolers; also coolers for yeast mash and the like. (Cf. gr. 14.)
19. Extraction of carbonic-acid gas produced by fermentation.

20. Impregnating beer, wine, etc., with carbonic acid. (Cf. gr. 19.)
21. Non-alcoholic beverages. (Cf. 53k.)

**DISTILLING AND RECTIFYING ALCOHOLIC LIQUORS, ESPECIALLY DISTILLERY MASH, SPIRITS, AND ALCOHOL. (Gr. 22-28.)**

22. Distilling alcoholic liquors by noncontinuous process. (Cf. distilling in general, 12a.)
23. Distilling of distillery mash and the like by continuous process.
24. Rectifying alcohol and the like by noncontinuous process. (Cf. gr. 25.)
25. Rectifying alcohol and the like by continuous process. (Cf. gr. 24.)
26. Combined distilling and rectifying of alcohol and the like.
27. Dephlegmators for rectifying alcohol and the like.
28. Related apparatus for distilling and rectifying alcohol and the like.

29. Denaturizing alcohol.

**6c. Preparation of Wine and Other Alcoholic Beverages (with the exception of beer). (Aging of wine, 6d, 6; impregnating wine with carbonic acid, 6b, 20.)**

1. Preparation and treatment of wine in general.
2. Removing yeast from wine.
3. Preparation and treatment of alcoholic beverages other than beer and wine, e. g., of fruit and berry wines, cordials, etc.



**6d. Pasteurizing, Sterilizing, Preserving, Purifying, Clarifying, and Aging.**

1. Pasteurizing beer and wine in bottles
2. Pasteurizing beer and wine in casks or special larger receptacles. (Cf. 30i; pasteurizing milk, 53e.)
3. Preserving and clarifying beer, wine, and the like. (Cf. gr. 1-2.)
4. Chemical purification of spirits and the like.
5. Physical-mechanical purification of spirits and the like.
6. Aging of alcoholic liquors.

**6e. Vinegar Manufacture.** (Without special groups. Wood vinegar, 12r, 2; acetic acid, 12o, 12.)**6f. Cask Cleaning, Pitching and Pitch-Removing Machines, Cask Burners, Bung Devices, Fermentation Bungs, Cellarage Implements.**

1. Machines for cleaning and drying casks and the like.
2. Sulphuring and other chemical treatment of casks and the like.
3. Cask pitching and pitch removing devices; cask burners; cask rolling machines.
4. Fermentation bungs. (Bungs, 64c, 21-26.)
5. Cellarage implements.

**CLASS 7.—SHEET METAL, TUBE AND WIRE MAKING AND WORKING, ALSO METAL ROLLING.** (Doubling, class 49i, other metal coating, class 48a, b. Casting pipes, class 31c.)**7a. Metal Rolling.**

1. Metal rolling in general. (Rolling mills.)
2. Rolling bar, flat, and round iron in two-high, reversing, and three-high mills.
3. Rolling rails, beams, and angle-iron in two-high, reversing, and three-high mills.
4. Transverse rolling of metal. (Also by means of plates.)
5. Rolling metal with grooved rolls.
6. Intermittent rolling. (Pilgering or "Pilgerschritt" mills, exclusive of those for tubing.) [The rolls have an intermittent swaging action.]
7. Rolling metal in universal and multiple mills, exclusive of sheet metal and wire, also of 7-f.
8. Rolling metal in special ways, as from the fluid condition.
9. Rolling sheet metal.
10. Rolling wire, fine iron, and band iron.
11. Wire rolling return-loop guides.
12. Lengthwise rolling of tubes.
13. Transverse and oblique rolling of tubes.
14. Intermittent rolling of tubes. ("Pilgerschritt" mills.) [See gr. 6 above.]
15. Rolling mill elements. (Journal boxes, construction of rolls, roll couplings.)
16. Roll adjusting devices.
17. Rolling mill accessories. (Block turning and shifting devices for equipment of roller mills.) (Roller conveyers, 81c, 30.)
18. Feed mechanism for "Pilgerschritt" mills. [See gr. 6 above.]

**7b. Manufacture of Sheet Metal, Wire, and Tubing, Not Included in a (including furnaces).****MANUFACTURE OF SHEET METAL AND WIRE.** (Gr. 1-6.)

1. Making sheet metal otherwise than by rolling. (Extrusion and other methods.)
2. Making wire otherwise than by rolling. (Extrusion and other methods.)

**7b—Continued.**

3. Wire drawing. (Wire drawing benches.)
4. Elements of wire drawing benches.
5. Winding up wire, band, and profile iron. (Winding drums, wire reels.) (Cf. 7d, 2.)
6. Special processes for making wire and making wire of special kinds.

**MANUFACTURE OF TUBING IN GENERAL.** (Gr. 7-14.)

7. Making seamed welded tubing from sheet metal (exclusive of gr. 9). (Tube welding machines and furnaces.) (Cf. 18c; 48d, 5; 49f, 6.)
8. Making weldless seamed tubing of sheet metal, exclusive of gr. 9 (with open seams or with the seams closed by riveting, folding, soldering, or by means of locking bars).
9. Making welded and weldless tubing with spiral seams.
10. Making single-walled seamless tubing by expressing (by means of extrusion presses). (Cf. 49f, 19.)
11. Making double-walled tubing, cable covers, filled tubes, or tubes provided with linings or coverings by expressing (by extrusion presses) (exclusive of gr. 12.)
12. Drawing (drawing down) tubing. (Tube drawing benches.)
13. Making tubing by opening double-walled rolled bars, and by other special processes.
14. Special working methods in the making of tubing (smoothing, grooving, etc.)

**MAKING TUBING OF SPECIAL SHAPES.** (Gr. 15-20.)

15. Making angular, corrugated, and ribbed tubing and tubing with ornamented surfaces.
16. Making ribbed tubing with special ribs formed upon a foundation tube
17. Making elbows and bent tubing from sheet metal. (Stovepipe elbows.)
18. Making conical tubing.
19. Making flanged sockets, L, T, and cross-shaped pieces of tubing. (Fittings.)
20. Making various special forms of tubing exclusive of gr. 11 and 15-19, e. g., connected tubes, masts of metal tubing, etc. (Cf. 65a, 13.)

**7c. Sheet Metal and Tube Working and Manufactures** (metal shears, class 49b, and soldering, 49f), also **Expanding and Cutting Tubing.****STRAIGHTENING, BENDING, CHAMFERING OF SHEET METAL; FOLDING, CREASING, FLANGING, AND BEADING OF SHEET METAL AND TUBING.**

1. Straightening and smoothing sheet metal. (Stretching machines.)
2. Corrugating sheet metal (making corrugated iron) by pressing.
3. Corrugating sheet metal (making corrugated iron) otherwise than by pressing.
4. Bending and chamfering sheet metal, folding, creasing, flanging, rolling, and milling of sheet metal or tubing. (Folding, chamfering, flanging, grooving [indenting], molding and wire-inlaying machines.) (Cf. Gr. 7-9.)
5. Beading and making iron with bulb cross section. (Beading and bulb-forming machines. Combined chamfering, beading, and bulb-forming machines.)
6. Making profile iron by means of drawing plates or drawing rolls.



## 7c—Continued.

## FOLDING SHEET-METAL CANS. (Gr. 7-9.)

7. Folding the longitudinal seam of cans. (Making can shells.)
8. Folding the transverse seam of cans by rolls. (Preserving-can closing machines with folding rolls.)
9. Folding the transverse seam of cans by stamps. (Preserving-can closing machines with folding stamps.)

## PUNCHING, SPINNING, EMBOSSING, PRESSING, DRAWING, AND PRODUCING RAISED FIGURES IN SHEET METAL OR TUBES. (Gr. 10-18.)

10. Punching sheet metal or tubing in general.
11. Making finely perforated sheet metal or tubing by punching. (Perforating and screen-making machines.) (Cf. 15c, 2.)
12. Spinning and embossing sheet metal or tubing. (Spinning lathes.)
13. Pressing sheet metal or tubes by rigid dies.
14. Pressing sheet metal or tubes by means of water, sand, plastic masses, etc. (Pressing apparatus of the Huber type.)
15. Drawing hollow objects from sheet metal or tubes. (Draw presses, exclusive of gr. 16.)
16. Hydraulic draw presses.
17. Safety appliances for presses and stamps [or punches] for sheet metal and tube working. (Cf. 47a, 18; 80a, 29.)
18. Elements of presses and stamps [or punches]. (Feeding, holding, and stripping devices, stamps and dies, couplings, etc.)

## SPECIAL TUBE WORKING. (Gr. 19-21.)

19. Pipe cutters, hand operated.
20. Rolling up, flanging, and rolling in of tubing. (Cf. 13f, 1.)
21. Joining tubing.
22. Joining sheet metal otherwise than by folding, welding, or riveting.
23. Covering and lining objects with sheet metal.

## WORKING UP SHEET METAL AND TUBING INTO SPECIAL ARTICLES. (Gr. 24-47.)

24. Making hollow objects of sheet metal in general (e. g., metal cans, also parts). (Cf. gr. 25.)
25. Making can closing and opening contrivances.
26. Making paint tubes, shells, and capsules of sheet metal exclusive of gr. 28. (Cf. 81c, 15.)
27. Making bottle caps of sheet metal.
28. Making cartridge shells and cartridge cases.
29. Making buttons and knobs of sheet metal.
30. Making metal gratings and lath (also lattice parts of sheet metal).
31. Making music sheets [rolls]. (Music sheet [roll] punching machines), (exclusive of 51d, 32; 51c, 4-5.)
32. Making rings, wheels, rollers, disks, hoops [or tires], and pulleys of sheet metal or tubes exclusive of gr. 33. (Cf. gr. 4; 47b.)
33. Making felloes and rims of sheet metal and tubing.
34. Making clasps, binding strips, and belt fasteners of sheet metal.
35. Making metal fittings and caps of sheet metal.
36. Making hinges, including strap hinges (hinge hooks).
37. Making lock parts of sheet metal.
38. Making finger rings of sheet metal and tubing.
39. Making articles of jewelry of sheet metal and tubing.

## 7c—Continued.

40. Making writing and drawing implements of sheet metal and tubing (e. g., pens, drawing pens, compasses). (Writing pens, 70b, 1.)
41. Making knives, forks, spoons, shovels, hoes, rakes, and spades of sheet metal, not by rolling. (Hoes for agricultural purposes, 45a; making spades of sheet metal by rolling, 7f, 3; spoons, 34f, 14.)
42. Making scythes and sickles of sheet metal, not by rolling. (Rolling of same, 7f, 5; special forms, 45c, 3.)
43. Making bicycle parts of sheet metal and tubing (not including wheels, felloes, and rims). (Cf. gr. 32-33.)
44. Making window and door frames [sash], mirror frames, and the like of sheet metal.
45. Making buckles, hooks, eyes, and corset fasteners of sheet metal. (Corset fasteners, cf. 3c, 5; also 71b, 2.)
46. Making sheet metal points of staylaces and shoe laces.
47. Making various special objects of sheet metal exclusive of gr. 24-46.

## 7d. Wireworking and Manufactures.

## WIREWORKING IN GENERAL. (Gr. 1-5.)

1. Wire bending and straightening, making undulated wire and wire eyelets.
2. Winding wire (making spiral and coiled wire, wire spooling). (Cf. 7b, 5.)
3. Making wire connections and uniting wire with sheet metal.
4. Making barbed wire.
5. Upsetting, stretching, cutting, slitting, and feeding wire, special wireworking operations, and covering and stiffening objects with wire.

## MAKING SPECIAL ARTICLES OF WIRE. (Gr. 6-16.)

6. Making wire lattice (wire-lattice machines). (Cf. 34c, 17; 34g, 17; 37d, 36; wire weaving, 86f.)
7. Making compression springs (spring winding and setting machines). (Springs for mattresses, 34g, 18.)
8. Making and repairing wire heddles and eyes. (Cf. 86c, 7; 86g, 2.)
9. Making carding combs of wire. (Card setting machines.) (Cf. 76b, 15.)
10. Making wire bows and fastenings for bottle caps.
11. Making bicycle spokes of wire.
12. Making umbrella frames of wire.
13. Making wire points for staylaces and shoe laces.
14. Making buckles, hooks, corset fasteners, hooks and eyes, and buttons of wire. (Cf. 71c, 60; making sheet-metal buttons, 7c, 29; celluloid buttons, 39a, 5; clothing hooks and eyes, 3c, 1; corset fastenings, 3c, 5; buttons in general, 44a, 1-14.)
15. Making metal belts and corset stays of wire. (Cf. corset stays, 3a, 16.)
16. Making various objects of wire, not elsewhere mentioned.

## 7e. Making Pins, Needles, and Nails, including Pressing, Rolling, and Cutting. (Hat pins, hair pins, scarf pins, and safety pins, 44a, 21-26; needles for embroidering and knitting machines, 25a, 19; nails as machine elements, 47a, 4.)

## MAKING PINS AND NEEDLES. (Gr. 1-6.)

1. Making ordinary pins and safety pins exclusive of Gr. 5 and 6. (Cf. 44a, 24 and 25.)
2. Making sewing needles, darning needles, pack-needles and awls exclusive of Gr. 5 and 6. (Needle-stamping and eye-making machines.)



## 7e—Continued.

3. Making machine needles (needles for sewing and knitting machines), exclusive of Gr. 5 and Gr. 6. (Cf. 52a, 40.)
4. Making special needles and pins, e. g., knitting needles, crochet needles, hair pins, hat pins, etc., exclusive of Gr. 5 and Gr. 6.)
5. Scouring, smoothing, polishing, grinding, and assorting of needles, etc.
6. Miscellaneous needle making, exclusive of Gr. 1-5, e. g., annealing.

## MAKING ORDINARY NAILS. (Gr. 7-13.)

7. Making wire nails, tacks, and brads, exclusive of Gr. 8, 9, and 10.
8. Making wire nails in pairs or groups.
9. Making string nails.
10. Elements of wire-nail machines. (Feeding, conveying, cutting off, pressing and pointing apparatus.)
11. Making cut nails and cut-nail blanks, exclusive of Gr. 14, also elements.
12. Rolling nails (exclusive of Gr. 17).
13. Pressing nails (exclusive of Gr. 15).

## MAKING SPECIAL NAILS, HORSESHOE NAILS, ETC. (Gr. 14-20.)

14. Making horseshoe nail blanks by cutting.
15. Making horseshoe nails by pressing.
16. Making horseshoe nails by forging (hammer machines and forging roll machines).
17. Making horseshoe nails by rolling.
18. Elements of horseshoe nail machines. (Feeding, carrying, turning, cutting off, pressing, and pointing apparatus.)
19. Making hooks, staples, bench and window irons [window bars], and railway spikes. (Cf. 44a, 31; 47d, 16; staples, 68b, 28.)
20. Making other special nails of sheet iron and wire exclusive of Gr. 14-19 (nails with caps, cut points, upholstery nails, etc.).

## 7f. Making Special Articles by Rolling, e. g., Screws, Wheels, Rings, Barrels, Balls, etc.

1. Rolling of wheels, rings, and tires (not included in Gr. 2 (wheel and tire rolling mills)).
2. Rolling barrel-shaped convex rings. [Bottoms of gas holders, etc.]
3. Rolling of shovels, spades, hoes, plowshares.
4. Rolling of forks and rakes.
5. Rolling of knives, sickles, and scythes (making sheet metal, 7 c, 42; special forms, 45c, 3).
6. Rolling of balls.
7. Rolling of horseshoes and horseshoe blanks. (Cf. 49g, 1.)
8. Rolling spiral and screw-shaped metal strips.
9. Rolling of screw threads. (Manufacture of drills by forging and pressing, 49g, 7.)
10. Rolling of various articles, e. g., gratebars (cf. 24f,) battery grids, bedplates, fishplates, and chairs for railways.

## CLASS 8.—BLEACHING, WASHING, DYEING, CLOTH AND WALL PAPER PRINTING AND FINISHING.

## 8a. Bleaching, Dyeing, Mercerizing, Impregnating, Washing, and Fulling of Textile Fibers, Yarn, Textile Fabrics, Knit Goods, etc. (Mechanical part.) (Chemical part 8i to n.)

## APPLICATION OF BLEACHING, DYEING, OR WASHING FLUIDS TO FIBROUS MATERIALS. (Gr. 1-2.)

1. Sprayers for applying bleaching, washing, or dyeing fluid to fibrous material.

## 8a—Continued.

2. Rollers and brushes for applying bleaching, washing, or dyeing fluid to fibrous materials.

## INTRODUCTION OF FIBROUS MATERIAL INTO BLEACHING, WASHING, OR DYEING FLUID. (Gr. 3-5.)

3. Bleaching, washing, and dyeing by introducing the fibrous material into the acting fluid.
4. Local dyeing (e. g., striping or clouding), mechanical part.
5. Chemical cleansing, cleaning textile materials by means of volatile solvents, also by centrifugal action, mechanical part. (Chemical part, 8i, 5.)

## PASSING THE FIBROUS MATERIAL THROUGH THE BLEACHING, WASHING, OR DYEING FLUID (Gr. 6-10.)

6. Passing warp when spread out or in rope form.
7. Passing textile fibers, rovings, etc.
8. Passing yarn in skeins.
9. Passing textile webs in extended position; also washing hose.
10. Passing textile webs in rope form.

## PASSING BLEACHING, WASHING, OR DYEING FLUID THROUGH THE FIBROUS MATERIAL. (Gr. 11-19.)

11. Passing bleaching, washing, or dyeing fluid through textile fibers and fiber bands in spool form.
12. Same, through moving fiber bands (sliver, rovings, and the like).
13. Same, through yarn in spool form and in cop form.
14. Same, through textile webs, knit goods, and linoleum.
15. Same, through yarn in skeins.
16. Same, through warp in beamed condition.
17. Same, through fibrous material in open vats, whose form is not determined by the fibrous material as in gr. 11-16.
18. Same, through fibrous material in closed vats, the form of which is not determined by the fibrous material as in gr. 11-16.
19. Same, through fibrous material by centrifugal action.

## MERCERIZING. (Mechanical part.) (Gr. 20-24.)

20. Mercerizing in general (mechanical part). (Chemical part, 8k, 2.)
21. Mercerizing of fibrous bands. [Sliver, etc.]
22. Mercerizing of warp.
23. Mercerizing of yarn in skeins.
24. Mercerizing of textile webs and knit materials.

## APPLYING SIZE TO FIBROUS MATERIALS, AND IMPREGNATING (waterproofing). (Mechanical part.) (Gr. 25-29.) (Chemical part, 8k; cf. also 76c.)

25. Sizing and impregnating warp. (Cf. gr. 26; 86a, 3; 86h, 8); also making wire thread. [A starch-finished sewing thread of two to four strands.]
26. Sizing and impregnating yarn in skeins. (Cf. gr. 25) also wire thread making.
27. Sizing and impregnating textile webs and knit goods. (Cf. gr. 28; 8k, 3 and 4.)
28. Sizing and impregnating roofing paper, felt, tent materials, ropes and heddles. (Cf. gr. 27.)
29. Size boilers, gas and other portable heaters for applying size to textile webs.

## FULLING. (Gr. 30-32.)

30. Roller fulling (for web fabrics, etc.).



## 8a—Continued.

31. Hammer fulling (for web fabrics, etc.).
32. Combined fulling (for web fabrics, etc). (Cf. gr. 30-31.)

## SQUEEZING AND PRESSING FIBROUS MATERIALS. (Gr. 33-34.)

33. Squeezing and pressing fibers, fiber bands [sliver, etc.] and yarn. (Cf. gr. 34.)
34. Squeezing and pressing textile webs and knit goods.

35. Rollers for dyeing, wringing, and sizing machines, etc.
36. Miscellaneous features of the mechanical part of dyeing exclusive of gr. 1-35, e. g., spools, spindles, yarn supports, reels, devices for producing diapered effects, and other implements used in textile dyeing.

## 8b. Finishing and Ornamenting Yarn, Textile Webs, Knit Goods, etc. (mechanical part) (except bleaching, dyeing, printing, mercerizing, impregnating, washing, and fulling).

## DRYING YARN, TEXTILE WEBS, KNIT GOODS, ETC. (Gr. 1-9.) (Drying fibers, 82a.)

1. Machines for drying textile webs, without stretching action.
2. Stretching [tenter] frames for stretching and drying textile webs.
3. Cylinder machines for drying textile webs.
4. Machines for stretching and drying textile webs without diagonal shifting movement.
5. Machines for stretching and drying textile webs with diagonal shifting movement. (Racking frames.)
6. Clamps for web stretching and drying machines.
7. Drying and oxidation machines for yarn, fiber bands, etc.
8. Drying apparatus for bands or ribbons. "[Bänder.]"
9. Miscellaneous drying apparatus for textile materials. (Cf. 82a; 82b.)

10. Guides and temples for finishing purposes. (Transverse stretching machines.)
11. Transverse stretching devices for braid.
12. Napping of textile webs, knit goods, etc.
13. Sponging (hot pressing) and moistening of textile webs and yarns.
14. Shearing textile webs and yarns.
15. Brushing and beating fabrics for finishing (not cleaning). (Cf. 8e, 1-2.)
16. Singeing textile webs and yarns.

## BURNISHING AND GLOSSING YARN, TEXTILE WEBS AND KNIT GOODS. (Gr. 17-26.)

17. Plate presses, press plates, heating devices for press plates and pressboard inserting machines for textile webs.
18. Trough presses for textile webs [cylinder and concave bed].
19. Calenders, glazing machines (roller presses), for textile webs.
20. Rolls for calenders, etc.
21. Mangles for textile webs. (Cf. 8d. 18.)
22. Stretching presses for textile webs.
23. Beating machines for textile webs.
24. Ironing of fabric in breadths.

## 8b—Continued.

25. Scouring of textile webs.
26. Producing luster (silk finish) upon textile webs and yarn.

27. Making woven fabric and yarn pliant; "breaking."
28. Cutting velvet.
29. Mechanical finishing of velvet and plush.
30. Various mechanical finishing processes for knit goods, feathers, laces, fabric products and tubular fabrics not included in gr. 1-29.
31. Figuring woven fabrics, etc., by applying colored powders, etc. (not included in gr. 1-29) by carbonizing, goffering, producing watered effects [Moiré], and by various other means.
32. Shearing of lace and embroidery. (Trimming and cutting out of lace and embroidery, 8f, 9.)
33. Miscellaneous features of mechanical finishing and decorating of yarn, woven fabric, knit goods, etc.

## 8c. Printing of Yarn, Woven Fabrics, Knit Goods, Floor and Wall Coverings, Etc. (Mechanical part.)

1. Processes for printing textile materials, floor coverings, wall coverings, etc.

## PLATE PRINTING MACHINES AND THE LIKE FOR PRINTING TEXTILE MATERIALS, FLOOR AND WALL COVERINGS, ETC. (Gr. 2-4.)

2. Plate printing machines for fiber bands [sliver, etc.]
3. Plate printing machines for yarn.
4. Plate printing machines for textile breadths (woven fabrics, woven goods, floor coverings, especially linoleum, and wall coverings, especially wall paper)

## CYLINDER PRINTING MACHINES AND THE LIKE FOR PRINTING TEXTILE MATERIALS, FLOOR AND WALL COVERINGS, ETC. (Gr. 5-7.)

5. Cylinder printing machines for printing fiber bands [sliver, etc.]
6. Cylinder printing machines for printing yarn.
7. Cylinder printing machines for printing textile breadths (woven goods, floor coverings, especially linoleum, and wall coverings, especially wall paper).

8. Stenciling textile materials, floor and wall coverings, etc.

9. Machine parts (rolls, plates, doctors), stencils, and appurtenances (e. g., doublers and the like) for machines for printing textile materials, floor and wall coverings, etc.

10. Cleaning the parts of machines for printing textile materials, floor and wall coverings, etc.

11. Miscellaneous features in the art of printing textile materials, floor and wall coverings, etc.

## 8d. Laundry, including Finishing. (Mechanical part.)

## WASHING CLOTHES. (Gr. 1-11.)

1. Wash boilers. (Cf. gr. 2.)
2. Devices for pouring or sprinkling material on the clothes [wash-boiler fountains, sprinklers, etc.]. (Cf. gr. 1.)
3. Washing machines with brushes.
4. Washing machines with rollers.
5. Washing machines with rubbers. (Cf. gr. 9 and gr. 15.)
6. Cylinder washing machines; centrifugal driers for laundry work. (Cf. gr. 12.)

**8d—Continued.**

7. Stamps and pounders with means for feeding air.
8. Stamps and pounders without air supply.
9. Miscellaneous washing machines not included in gr. 3-6. (Cf. gr. 5.)
10. Washboards (rubbers and holders), wash tubs and stands.
11. Laundry treatment in general; bluing and dampening clothes, clothes tongs, sprinkling clothes.

**DRYING CLOTHES. (Gr. 12-16.)**

12. Wringers. (Cf. gr. 6.)
13. Clothes lines.
14. Clothes pins.
15. Drying apparatus for laundering. (Cf. gr. 5, 16, 22.)
16. Stretching and drying apparatus for laundering. (Cf. gr. 15.)

**LAUNDRY FINISHING. (Mechanical part.) (Gr. 17-22.)**

17. Starching machines.
18. Laundry mangles. (Cf. 8b, 21.)
19. Laundry calenders.
20. Ironing machines for laundering clothes; folding machines.
21. Sadirons and appurtenances (handle fastenings, heating devices, stands, cleaners, edge polishers.) (Cf. 3d, 6.)
22. Ironing boards, tables, and the like. (Cf. gr. 15.)

**8e. Dusting, Cleaning, and Renovating Fabric and Knit Articles, etc. (mechanical part), also Bed-Feather Cleaning and Feather-Bed Filling Machines; Manufacture of Bed Feathers from Natural Feathers.**

1. Beating machines for woven fabrics and the like (for removing dust and cleaning; for finishing, 8b, 15). Carpet-cleaning frames.
2. Brushing machines for woven fabrics and the like (for cleaning and renovating; for finishing, 8b, 15; cf. 34c, 8). Spot removers.
3. Pneumatic cleaners for fabrics and the like.
4. Sack cleaning and turning apparatus.
5. Bed-feather cleaning and sorting, and feather-bed filling. Manufacture of bed feathers from bird feathers.

**8f. Folding, Measuring, Winding, Laying, Doubling, Cutting, Putting Up, and Packing Yarn, (cf. Class 76d) Woven Fabrics, Knit Goods, etc. (mechanical). (Surface measuring machines, 42c, 13.)**

1. Measuring machines for fabric breadths and bales.
2. Measuring and marking machines for fabric breadths (for printing numbers or applying marks).
3. Winding machines for fabric breadths, ribbons, and laces. (Cf. gr. 4.)
4. Measuring and winding machines for fabric breadths, etc. (Cf. gr. 1 and gr. 3.)
5. Laying and transverse folding machines for fabric breadths.
6. Doubling machines for fabric breadths.
7. Winding rollers and boards for measuring, winding, and marking machines. (Cf. gr. 1-4.)
8. Transverse and diagonal cutters for fabric breadths. (Cf. 55e, 5.)
9. Longitudinal cutters for fabric breadths. (Cf. 55e, 4.) Trimming and cutting out of lace and embroidery.
10. Trimmers for fabric breadths. (Cf. 3d, 5.)
11. Sample cutting machines for cutting samples of goods.

**8f—Continued.**

12. Cutting apparatus for wall paper, linoleum, and the like. (Cf. 37d, 31.)
13. Putting up and packing textile materials (sample holders, sample cards, etc.). Machines for pasting cloth samples. (Cf. 51g, 22; 81c, 17.)

**8g. Making Pleats, Ruching and Fluting or Crimping. (Mechanical.) (Without special groups.)****8h. Coverings, including Linoleum, Wall Linoleum "[Linkrusta]", oilcloth, wall paper, and other surface coverings. (Mechanical part.)**

1. Making linoleum from plates of the coating material.
2. Making linoleum from granulated coating material.
3. Roller and plate presses and other machines for the completion of steps in linoleum and linkrusta manufacture.
4. Substitutes for linoleum.
5. Processes and apparatus for streaking, veining, and the like for inlaid linoleum.
6. Wall coverings, papers, and processes for their manufacture. (Printing 8c, 4, and 7; chemical part, 8n, 6.)
7. Oilcloth, artificial leather made by coating textile materials and like surface coverings. (Cf. 81, 2; 39a, 10; 39b, 12; 55f, 14.)

**8i. Bleaching and Washing. (Chemical part)**

1. Bleaching in general, chemical part. (Bleaching, mechanical part, 8a, 1-19.)
2. Bleaching with chlorine.
3. Bleaching by means of electricity.
4. Bucking (preliminary to dyeing) and removing air from textile fibers.
5. Washing, chemical part (cf. 8a, 5; mechanical part, 8d); washing materials not containing soap, bluing preparations. (Saponaceous washing materials, 23c, 2.)

**8k. Cloth Finishing, Mercerizing. (Chemical part.) Impregnating. (Waterproof and fireproof fabrics.)**

1. Cloth finishing, chemical part. (Laundry finishing, mechanical part, 8d, 17-22.)
2. Mercerizing, chemical part. (Mechanical part, 8a, 20-24.)
3. Impregnating for making waterproof fabrics, chemical part. (Mechanical part, 8a, 27; cf. also 76c, 27.)
4. Impregnating for making fireproof fabrics, chemical part. (Mechanical part, 8a, 27.)

**8l. Coverings, including Linoleum, Oilcloth, Roofing Felt, and other Materials for Overlaying Surfaces. (Chemical part.)**

1. Linoleum, chemical part. (Linoleum, mechanical, 8h.)
2. Oilcloth and artificial leather made by impregnating or coating fabrics, chemical part. (Cf. 8h, 7; 39a, 24; 39b, 12; 55f, 14.)
3. Roofing felt, chemical part. (Mechanical, 8a, 28.)

**8m. Dyeing and Mordanting (chemical part); Developing Colors upon the Fibers; Preparation of Dyes; Dyeing. (Gr. 1-10.)**

1. Dyeing in general; bucking after dyeing.
2. Dyeing in a plurality of colors.
3. Dyeing with indigo and other body colors.
4. Dyeing with natural dyestuffs (other than indigo, gr. 3.)



## 8m—Continued.

5. Dyeing with alizarin and similar mordanting dyes.
6. Dyeing with anilin black.
7. Dyeing with azo dyes.
8. Dyeing with sulphur dyes.
9. Dyeing with inorganic materials.
10. Dyeing of nontextile materials (e. g., leather).

11. Mordants for dyeing and cloth printing, loading of fibers (silk).
12. Developing colors upon the fibers.
13. Preparation of the dyestuff.

## 8n. Cloth Printing and Other Surface Ornamentation of Textiles. (Chemical part.)

## CLOTH PRINTING. (Gr. 1-4.)

1. Cloth printing in general. Preparation of cloth printing colors.
2. Solvents for the colors used in cloth printing.
3. Resists for cloth printing.
4. Printing textiles by discharging.

## SURFACE ORNAMENTATION OF TEXTILES OTHER THAN PRINTING (chemical part). (Gr. 5-8.)

5. Surface ornamentation of textiles in general (chemical part). Fixation of silk finish by chemical means.
6. Tapestry [decorated cloth, etc.]. (Cf. 75b.)
7. Stencils and the like for surface ornamentation of textiles. (Cf. 75c.)
8. Veining and marbling textiles. (Cf. 75d.)

## CLASS 9.—BRISTLE WARES, INCLUDING PAINT AND OTHER BRUSHES, BROOMS, AND HANDLE AND STICK FASTENINGS FOR THE SAME.

1. Fastening bristles in paint brushes.
2. Fastening bristles in brushes and brooms.
3. Hand, hat, clothing, furniture, and polishing brushes.
  1. Cask, scouring, glass, and bottle brushes.
5. Machines for boring the brush bodies and for squeezing together, inserting, and fastening the bristles. (Cf. gr. 4.)
6. Machines for trimming bristles and brushes including paint brushes, also for removing adhering bristles, etc.
7. Machines for forming uniform tufts of bristles in bristle wares.
8. Making artificial bristles.
9. Leather dubbing and shoe polishing brushes. (Cf. gr. 10.)
10. Stick fastenings for bristle wares. (For paint brushes, gr. 16.)
11. Paint and other brushes with variable lengths of bristles; paint brush bridles.
12. Shaving brushes.
13. Ruling, drawing, and artists' brushes.
14. Preparation of bristles. (Cf. gr. 8.)
15. Round brushes.
16. Making paint brushes.
17. Paint and other brushes with fluid containers and feeding means. [Fountain brushes.]
18. Brushes with cases.
19. Wire brushes.
20. Folding brushes, pocket brushes. (Cf. gr. 18.)
21. Tooth and nail brushes.
22. Electric brushes, brushes which remove the dust by suction, and bristle wares of various kinds not included in gr. 1-21.
23. Scrub brushes.

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## CLASS 10.—FUEL.

## 10a. Carbonizing and Coking.

## COKE OVENS. (Gr. 1-10.)

1. Upright coke ovens. (Cf. 24c, 8; 26a, 8.)
2. Beehive coke ovens.
3. Horizontal coke ovens, general arrangement, irrespective of the particular construction of the system of heating flues.
4. Heat-exchanging arrangements for coke ovens. (Cf. 24c, 5-7.)
5. Arrangements for introducing the gas and air for heating coke ovens (Burners). (Cf. 24c, 10.)
6. Systems of heating flues for horizontal coke ovens with vertical flues.
7. Systems of heating flues for horizontal coke ovens with horizontal flues.
8. Systems of heating flues for horizontal coke ovens with both vertical and horizontal flues.
9. Coke ovens for continuous operation.
10. Coke ovens of various constructions (e. g., with obliquely disposed chambers). (Cf. 26a, 7; 80c.)

## AUXILIARY MECHANISM FOR COKE OVENS. (Gr. 11-20.)

11. Charging apparatus for coke ovens. (Cf. 26e, 1-4 and 6.)
12. Doors and closures for coke ovens, also apparatus for raising and lowering the doors. (Cf. 24k, 1; 26a, 14; 36a, 15.)
13. Elements of coke ovens (tiles, etc.).
14. Coal stamps and compressors and accessories.
15. Mechanism for handling the charge inside the oven. (Trimming, pressing together, producing hollow places in the charge, etc.)
16. Coke-drawing machines and appurtenances. (Cf. 26e, 4-6.)
17. Auxiliary apparatus for the coking process in general. (Quenching and cooling the coke, etc.) (Cf. 26e, 7.)
18. Preliminary treatment of the material for carbonizing or coking exclusive of stamping and compressing, e. g., by adding other material. (Cf. 18a, 2.)
19. Recovery and removal of the coke-oven gases. (Cf. 12e, 2; 18a, 8; 26a, 15, 16; 26d, 1 and 5; 40a, 15.)
20. General features relating to the gas conduits in connection with coke ovens. (Regulation of pressure, cleaning the conduits, utilization of waste heat, etc.) (Cf. 24g; 26a, 15-17; for gas-pressure regulators, cf. 4c, 27-32.)

## PROCESSES FOR COKING AND CARBONIZING. (Gr. 21-22.)

21. Carbonizing or coking by conducting hot gases through the material. (Cf. 26a, 2, 11.)
22. Methods of coking, carbonizing, or partial gasifying of fuels in general, also heating processes. (Cf. 12r.)

## OVENS FOR CARBONIZING AND DESTRUCTIVE DISTILLATION. (Gr. 23-26.)

23. Distilling ovens, especially for lignite.
24. Charcoal ovens with internal heating bodies.
25. Charcoal ovens with iron retorts, either fixed or rotary. (Cf. 40a, 5; 82a, 18, 19.)
26. Ovens for continuous carbonizing with mechanical conveyance of the material through the carbonizing chamber. (Cf. gr. 9.)

## CARBONIZING WOOD AND PEAT. (Gr. 27-29.)

27. Carbonizing wood and peat under pressure.

## 10a—Continued.

28. Special construction of carbonizing ovens for wood and peat. (Cf. 12r, 1.)
29. Special processes for carbonizing peat, including electric carbonization. (Cf. gr. 22.)

## 10b. Briquets, Firelighters, etc., Solidifying Fluid Fuels (also class 23c), Improvement of Fuels. (Briquet presses, class 80A.)

1. Formation of briquets without extraneous binding materials.
2. Formation of briquets with inorganic binders.
3. Formation of briquets with organic binders (also with peat). (Peat briquets, 10c, 8.)
4. Formation of briquets with a mixture of organic and inorganic binding materials.
5. Manufacture and preliminary treatment of binders for briquet making. (Cf. 22h.)
6. Special forms of briquets (of determinate arrangement of layers, or of particular shape, also coatings for briquets).
7. Processes of mixing the briquet material with a binder (cf. 12e, 4; 50f; 80a, 7), also pitch boilers and means for distributing the fluid pitch over the briquet material. (Tar kettles, 22h, 7.)
8. Improvement of natural fuels: Saturating with petroleum or oil vapors, addition of oxygen-containing materials to briquets (glow-fire materials), formation of a protective coating on small coal, addition of materials to briquets for preventing smoke and preventing injury from sulphur. (Cf. gr. 10.)
9. Briquet manufacture in general, and mechanism for briquet manufacture exclusive of compressing and drying apparatus. Moistening the material, drying, cooling the briquets, removal of dust. (Cf. 12e, 2; 50e; 80a, 24, 82a; ore briquets, 18a, 2.)
10. Material to be sprinkled upon the fuel, etc., for prevention of smoke in furnaces.
11. Solidifying fluid fuels for heating purposes (for making fire lighters, briquets, etc.). (Cf. 23c, 3.)
12. Compositions for combustible fire lighters.
13. Special form features of combustible fire lighters. (Cf. gr. 6, 14.)
14. Apparatus for making and for impregnating combustible fire lighters. (Cf. gr. 15; 80a, 23-29.)
15. Incombustible porous bodies to be saturated with oil or the like. (Incombustible fire lighters.) (Cf. gr. 34d, 7.)
16. Treatment of materials of all kinds, especially refuse, to adapt them for use as artificial fuels. (Cf. 1a, 31.)

## 10c. Peat Digging, Preparation of Peat for Use as Fuel. (Drying peat and coal, class 82a.)

1. Peat digging in general. (Cf. 5a, 11, 12; 80a, 1.)
2. Peat cutting [digging] machines, peat dividers (block cutters), and peat-block delivering machines. (Cf. 80a, 35-41.)
3. Peat-cutting machines.
4. Peat machines (for working up masses of peat into briquets). (Cf. 80a, 2.)
5. Apparatus for reduction of raw peat to peat mass, litter, powder, etc. (exclusive of the special peat-working machines); (peat fertilizer, 16, 14; peat fiber, 29a, 5; 29b, 2; 76b, 37; peat for fodder, 53g; peat for paper, 55a, 4; peat mass for building, etc., 80b, 17.)
6. Processes for removing water from peat (Cf. gr. 7-8), also processes and appliances for manufacture of peat charcoal from wet peat in one operation, also removal of water from peat by electricity. (Peat electro-osmosee.) (Cf. 10a, 27-29; 82a, 21.)

## 10c—Continued.

7. Presses and other appliances for removing water from peat. (Cf. 58a; 58b; 82b.)
8. Processes and apparatus for manufacture of peat briquets exclusive of pressing. (Peat as a binder, 10b, 3.)

## CLASS 11.—BOOK BINDING, ALBUMS, LETTER FILES, AND PORTFOLIOS.

## 11a. Stitching Machines, Implements, and Processes. (See also class 54a.)

## STITCHING PROCESSES AND STITCHING MACHINES. (Gr. 1-7.)

1. Stitching processes.
2. Thread-stitching machines with straight needles.
3. Thread-stitching machines with bent needles.
4. Thread-stitching machines which form safety knots.
5. Wire-stitching machines in general. (Cf. gr. 7.)
6. Wire-stitching machines which automatically form rivets.
7. Machines for binding by means of eyelets
8. Machines for perforating folded sheets
9. Machines for forming loops of thread on paper leaves.
10. Tools for stitching with thread
11. Tools for stitching with wire.

## 11b. Paper Trimmers and Pasteboard Cutters. (Paper cutting machines, 55e.)

## PAPER TRIMMING MACHINES. (Gr. 1-9.)

1. Paper trimming machines with single cut.
2. Paper trimming machines which cut on more than one side.
3. Paper trimming machines with automatic pressing means.
4. Paper trimming machines for index cutting [on book edges.]
5. Paper trimming machines for coupons and the like.
6. Paper trimming machines with protective devices.
7. Paper trimming machines with cut indicators.
8. Paper trimming machines for making narrow and beveled cuts; rounding off the corners of books.
9. Paper cutting machines for cutting out apertures.
10. Paper board cutters.
11. Tools for trimming paper.

## 11c. Bookbinding Implements, Machines, and Processes (exclusive of sewing and trimming; folding machines, 15e.)

1. Machines and processes for complete binding of books
2. Machines for gathering the signatures for a book.
3. Machines for making book backs and covers.
4. Ornamentation in bookbinding.
5. Bookbinding tools.

## 11d. Books, Bindings, Covers, Cover Protectors, Markers, Indexes for Books, Catalogues for Libraries, and the like.

1. Books.
2. Book bindings.
3. Book covers.



## 11d—Continued.

4. Book cover protectors.
  5. Markers.
  6. Indexes for books.
  7. Catalogues for libraries and the like.
- 11e. Albums, Letter Portfolios, Letter Files, Paper Punches, Pocketbooks, Portfolios of all kinds, Paper Holders, Newspaper Holders, Calendar and Memorandum Blocks, and the like.

## ALBUMS. (Gr. 1-3.)

1. Albums in general.
2. Closures for albums.
3. Leaves for albums.

4. Newspaper holders.
5. Newspaper portfolios.
6. Calendar blocks. (Cf. 42n, 12.)
7. Memorandum blocks.
8. Paper punches, per se, for portfolios, including the reenforcing of the aperture. (Cf. gr. 9.)
9. Paper punches on portfolios. (Cf. gr. 8.)
10. Binding clamps not requiring mutilation of the leaves. (Cf. gr. 11.)
11. Binding clamps requiring mutilation of the leaves. (Cf. gr. 10.)
12. Pocketbooks with devices for classifying the contents. (Cf. 33b, 1.)
13. Letter portfolios. (Letter files, gr. 14 et seq; filing cases for formulas, 34i, 16.)

## LETTER FILES NOT REQUIRING MUTILATION OF THE LETTERS. (Gr. 14-16.) (Cf. gr. 13 and 25.)

14. Letter files with clamps (without perforation). (Cf. gr. 23.)
15. Letter files with wires, cords, or the like placed in the fold of the letter.
16. Letter files in which the letters are to be pasted.

## LETTER FILES REQUIRING MUTILATION OF THE LETTERS. (Gr. 17-23.) (Cf. gr. 13 and 26.)

17. Letter files with rigid, rotatable, curved bows engaging one another. (Cf. gr. 18 and 21.)
18. Letter files with rigid bows shaped and guided in various ways. (Cf. gr. 17 and 21.)
19. Letter files with telescoping points and tubes movable perpendicularly to the cover surfaces. (Cf. gr. 20.)
20. Letter files with telescoping points and tubes guided in any desired manner. (Cf. gr. 19.)
21. Letter files with opposed, offset, movable bows. (Cf. gr. 17 and gr. 18.)
22. Letter files with yieldable fastening means.
23. Letter files with clasps and perforations. (Cf. gr. 14.)

24. Letter files in which the letters are fastened by means of inserts.
25. Letter holders [clips, etc.] which do not mutilate the paper. (Cf. gr. 14-16.)
26. Letter holders which mutilate the paper. (Cf. gr. 17-23.)
27. Arrangements for stamp collecting and the like.
28. Pigeonhole cases.

## CLASS 12.—CHEMICAL PROCESSES AND APPARATUS, SO FAR AS NOT INCLUDED IN SPECIAL CLASSES.

- 12a. Boiling and Digesting Processes and Vessels, Vaporizing, Concentrating, Distilling (except dry distillation of wood under r, and of coal, classes 10a and 26a; distillation of spirits, class 6b; means for transferring heat, classes 17 e and f), Condensing (condensation of steam, classes 17d and 14g; mechanically liquefying such gases as condense with difficulty, class 17g).

1. Boiling or digesting for chemical purposes. (Cf. 34l; 1-9, 53g; 89e.)
2. Boiling down or concentrating for chemical purposes. (Evaporation, 89d.)
3. Distillation for general chemical purposes. (Cf. 6b; 23 a and e; dry distillation, 12r.)
4. Condensation or solidification of vapors for general chemical purposes. (Cf. 14g; 17d; 89e.)

- 12b. Calcining and Fusing. (Without specific groups.)

- 12c. Dissolving, Lixiviating, Crystallizing, Solidifying, Fluids (except solidifying spirits, class 10b; and solidifying petroleum, classes 10b and 23c).

1. Dissolving and lixiviating in general.
2. Crystallizing in general. (Cf. 12l, 4; 89d, 2.)
3. Solidifying fluids. (Reduction of fluids, e. g., acids or other chemicals, to semifluid or solid masses, as for transportation.)

- 12d. Clarifying, Separating, Filtering, Including Filters and Filter Presses.

1. Clarifying and separating fluids.

## FILTRATION PLANTS. (Gr. 2-4.)

2. Filtration plants in which loose filter material is used.
3. Filtration plants in which solid filter material is used (stone, artificial stone, etc.)
4. Filling and emptying apparatus for filtration plants. (Gr. 5-9.)

## FILTER PRESSES.

5. Filter presses in general.
6. Closures for presses.
7. Leaching out and washing in connection with filter presses.
8. Feed apparatus for filter presses.
9. Presses and apparatus for making filter cake.

## FILTERS. (Gr. 10-24.)

10. Filtering apparatus with loose, granular, or fibrous material.
11. Charcoal filters and regeneration of the same.
12. Filtering apparatus with solid filter material (stone, artificial stone, etc.)
13. Filtering apparatus in general, employing strainers, cloths, or the like.
14. Filtering apparatus employing precipitated filter material.
15. Drum filters employing loose filter material.
16. Drum filters employing strainers, cloths, etc.
17. Centrifugal filters.
18. Bag filters. (Cf. gr. 19.)
19. Filtering apparatus employing tubular filtering bodies. (Cf. gr. 18.)

## 12d—Continued.

20. Filtering apparatus employing pan-shaped filtering bodies.
21. Filter funnels and funnel supports.
22. Filters for pipes, pumps, cocks, etc.
23. Filters for viscous liquids (as oil) and fusible materials (as resin or wax.)
24. Filters which employ electricity.

## FILTER MATERIALS AND CLEANING SAME. (Gr. 25-27)

25. Filter materials.
26. Cleaning apparatus for loose filter material.
27. Cleaning apparatus for solid filter material.

## 12e. Absorption and Purification of Gases and Vapors (purifying in gas manufacture, class 26d), Separating Gases (such as condense with difficulty, by means of liquefaction, class 17g), Mixing Solids and Fluid Bodies as Well as Gases and Vapors either with one Another or with Fluids.

1. Absorption of gases and vapors.
2. Purification of gases and vapors. (Cf. 10a, 20; 24g, 6; 26d, 1 and 5; 40a, 15.)
3. Separation of gases and vapors.
4. Mixing gases and vapors with one another and with liquids, also mixing solid and fluid bodies. (Cf. 4c, 44, 45; 26c, 7.)

## 12f. Siphons, Containers, and Closures for Acids and Condensed Gases, Etc., Charging Apparatus (also class 24h, 26e, etc.), Regulators for Inflow and Outflow (Pumps, class 59, cock and valve construction. 67g).

1. Acid siphons and closures for acid containers. (Compressed-air lifters for acids, 59c, 7; closures for containers, 64a, 19-55.)
2. Containers for compressed and liquefied gases, etc. (Cf. 64c, 7; 85a, 5.)
3. Acid-proof containers. (Cf. 21b, 1.)
4. Feeding devices and in and out flow regulators for chemical purposes.

## 12g. Purely Chemical Processes in General and Related Apparatus. (Catalysis, general chemical reactions, etc.)

1. Purely chemical processes and apparatus in general. (Testing apparatus, 42l, 13.)
2. Contact processes and catalytics in general. (Cf. 12i, 24.)

## 12h. General Electro-Chemical Processes and Apparatus.

1. Electrolytic processes and apparatus in general.
2. Electrodes for general electrolytic uses. (Cf. 21b, 7; 40c, 3, 4.)
3. Diaphragms for general electrolytic uses. (Cf. 21b, 2; 40c, 3-4.)
4. Miscellaneous electro-chemistry (except gr. 1-3); electro-chemical treatment of gases and vapors in general.

## 12i. Metalloids and Their Compounds (except those under k).

1. Hydrogen and hydrides. (Cf. gr. 13.)

## HALOGENS AND THEIR COMPOUNDS. (Gr. 2-10.)

2. Chlorine from hydrochloric acid (including electrolytic production).
3. Chlorine and hydrochloric acid from chlorides.

## 12i—Continued.

4. Chlorine, miscellaneous (except gr. 2-3).
5. Hydrochloric acid, miscellaneous (except gr. 3)
6. Hypochlorites, including chloride of lime. (Cf. gr. 8.)
7. Chlorates. (Cf. gr. 8.)
8. Hypochlorites and chlorates, electrolytic production.
9. Bromine and iodine and their compounds.
10. Fluorine and its compounds. (Cf. gr. 3f and gr. 37.)

## OXYGEN AND RELATED SUBJECT MATTER. (Gr. 11-16.)

11. Preparation of oxygen, Brin process. [ $\text{BaO}_2$ .]
12. Preparation of oxygen, Tessie du Motay process.
13. Preparation of oxygen, also hydrogen, by electrolysis of water.
14. Preparation of oxygen by various methods (except gr. 11-13). (Cf. 17g.)
15. Ozone (manufacture).
16. Hydrogen peroxide and the true peroxides (e. g., sodium, barium, magnesium, and zinc peroxides; for superoxides of other heavy metals, e. g., manganese and lead, see 12n), inorganic peracids and their salts as per-sulphates, per-carbonates, per-borates.

## SULPHUR AND ITS COMPOUNDS. (Gr. 17-25.)

17. Sulphur and selenium.
18. Sulphuretted hydrogen and sulphides, sulphides of alkalis and alkaline earths. (Cf. gr. 19.)
19. Sulphides from sulphates by reduction.
20. Chlorine-containing sulphur compounds (sulphur chloride, sulphuryl chloride, thionyl chloride).
21. Sulphurous acid and sulphites. (Sulphites of alkalis and alkaline earths.)
22. Hydrosulphites and thiosulphates.
23. Concentration of sulphuric acid.
24. Sulphuric acid anhydride, and preparation of sulphuric acid by the contact method.
25. Sulphuric acid, miscellaneous (except gr. 23-24). Lead chamber processes.

## NITROGEN AND ITS COMPOUNDS. (Gr. 26-29.)

26. Nitrogen (Cf. 17g) and its oxides (except gr. 27) Synthetic preparation of nitrogen-oxygen compounds. (Cf. 12h, 4; 12l, 6.)
27. Preparation of nitric acid from nitrates; distillation, concentration, condensation, purification, re-extraction.
28. Nitrites.
29. Nitrides, metal amides, and nitrogen-hydrogen acids.
30. Phosphorus and its compounds. (Cf. gr. 16.)
31. Arsenic, antimony, vanadium, and their compounds, including those containing fluorine.

## CARBON AND ITS COMPOUNDS. (Gr. 32-36.)

32. Carbon (also graphite). (Lampblack, 22f, 14.)
33. Carbonic oxide and carbon bisulphid.
34. Carbonic acid. (Cf. gr. 35.)
35. Carbonic-acid producers.
36. Carbides. (Metal and metalloid.)

37. Silicon and its compounds, including those containing fluorine; silicates, e. g., water glass; metal silicides.
38. Titanium compounds.
39. Boron and its compounds; borax.



**12k. Ammonia, Cyanogen, and Their Compounds.****AMMONIA AND ITS COMPOUNDS. (Gr. 1-6.)**

1. Separation of ammonia from liquids, e. g., gas water.
2. Separation of ammonia from gases and vapors. (Bell apparatus.)
3. Synthesis of ammonia.
4. Preparation of ammonia from molasses waste.
5. Preparation of cyanogen from organic nitrogenous substances exclusive of molasses waste. (Gr. 4.)
6. Ammonia, miscellaneous (except gr. 1-5); ammonia salts.

**CYANOGEN AND ITS COMPOUNDS.**

7. Preparation of cyanogen compounds by decomposition of nitrogenous organic matter.
8. Synthesis of cyanogen compounds.
9. Separation of cyanogen compounds from gases and vapors containing cyanogen. (Cf. 26d, 8.)
10. Extraction of cyanogen compounds from other compounds of cyanogen or from matter containing cyanogen; miscellaneous.

**12l. Compounds of the Alkali Metals.****ALKALI SALTS, NOT INCLUDING CARBONATES. (Gr. 1-6.)**

1. Condensation of salt solution (brine).
2. Purification of salt solution (brine).
3. Salt (table salt), miscellaneous (except gr. 1-2).
1. Treatment of mixed natural saline deposits (especially the so-called Stassfurt industry).
5. Alkali sulphates.
6. Alkali nitrates. (Cf. 12i, 26.)

**ALKALI OXIDES, HYDROXIDES, AND CARBONATES. (Gr. 7-15.)**

7. Preparation of alkali oxides. (Alkali peroxides, 12i, 16.)
8. Preparation of alkali carbonates. (Solvay process.)
9. Preparation of alkali hydroxides and alkali carbonates by electrolysis (except gr. 10).
10. Preparation of alkali hydroxides by electrolysis by the use of a fluid cathode.
11. Preparation of alkali hydroxides and alkali carbonates from waste liquors.
12. Preparation of alkali hydroxides from alkali carbonates or from alkali metal alloys.
13. Preparation of alkali hydroxides and alkali carbonates by various methods (except gr. 7-12).
14. Preparation of alkali bicarbonates from alkali monocarbonates.
15. Miscellaneous manufacture of alkali oxides, hydroxides, and carbonates not included in gr. 7-14; purifying, crystallizing, comminuting, packing, etc.

16. Compounds of rare alkali metals, e. g., caesium, lithium, rubidium.

**12m. Compounds of the Earth Metals and Alkaline Earth Metals.****COMPOUNDS OF THE ALKALINE EARTH METALS. (Gr. 1-4.)**

1. Oxides and hydroxides of calcium, barium, and strontium. (Related peroxides, 12i, 16.)
2. Salts of calcium, barium, and strontium.
3. Magnesium compounds. (Magnesium peroxide, 12i, 16.)
4. Glucinium compounds.

**12m—Continued.****EARTH-METAL COMPOUNDS. (Gr. 5-9.)**

5. Aluminates and manufacture of alumina therefrom. (Cf. gr. 6.)
6. Manufacture of alumina (also emery and corundum) from compounds other than the aluminates. (Cf. gr. 5.)
7. Aluminum salts (chloride, sulphide, sulphate, alum.)
8. Chromium compounds.
9. Compounds of the rare earth metals (cerium, thorium, etc.), also radium.

**12n. Compounds of the Heavy Metals. (Metallurgical processes, 40a; 40c.)**

1. Metal oxides and salts in general. Colloidal metals and metal compounds; purely chemical preparation of metals and metal powders.
2. Iron compounds in general. (Cf. 30h, 8.)
3. Manganese compounds, including manganese peroxide.
4. Nickel and cobalt compounds
5. Copper compounds.
6. Zinc compounds.
7. Lead compounds, including lead peroxide.
8. Mercury, silver, and gold compounds.
9. Tin compounds.
10. Tungsten compounds.

**12o. Hydrocarbons, Alcohols, Aldehydes, Ketones, Organic Sulphur Compounds, Hydrated Compounds, Carbon Acids, Carbon Acid Amides, Urea, and Other Compounds.****HYDROCARBONS AND THEIR SUBSTITUTION PRODUCTS. (Gr. 1-4.)**

1. Hydrocarbons.
2. Halogen compounds of hydrocarbons.
3. Nitro and nitroso compounds of hydrocarbons in general. (Cf. gr. 4.)
4. Polynitro hydrocarbons, which serve as musk substitutes.

**ALCOHOLS, ALDEHYDES, KETONES, ETC. (Gr. 5-10.)**

5. Alcohols and ethers. (Cf. spirits, 6b and d.)
6. Synthetic derivatives of the carbohydrates, etc. (e.g., cellulose esters). (Cf. gr. 89.)
7. Aliphatic and hydrocyclic aldehydes.
8. Aromatic aldehydes. (Oxyaldehydes, gr. 9.)
9. Aromatic oxyaldehydes, especially vanillin. (Cf. 12q, 14.)
10. Ketones and chinones.

**CARBON ACIDS AND DERIVATIVES. (Gr. 11-18.)**

11. Aliphatic carbon acids in general (except acetic acid, gr. 12, and tartaric acid, gr. 13).
12. Acetic acid. (Cf. 12r, 2, wood-vinegar manufacture.)
13. Tartaric acid.
14. Aromatic carbon acids and colophonic acids. (Phenol and naphthol carbon acids, 12q, 29-30.)
15. Keto carbon acids.
16. Carbon acid amides.
17. Urethane and urea.
18. Benzoic acid sulphinid (Saccharin.)

**COMPOUNDS WITH UNSATURATED ATOM CHAINS. (Gr. 19-22.)**

19. Compounds with unsaturated atom chains in general.
20. Phenols with unsaturated atom chains (e. g., eugenol and iso-eugenol. (Cf. 12q, 14.)

## 12o—Continued.

21. Carbon acids with unsaturated atom chains (e. g., cinnamic acid).
22. Compounds with unsaturated nitrogen-carbon connections. (N-C) e. g., benzylidene compounds.

## ORGANIC COMPOUNDS NOT OTHERWISE SPECIFIED, AND GENERAL PROCESSES OF ORGANIC CHEMISTRY. (Gr. 23-27.)

23. Organic sulphur compounds in general (also sulpho acids with the exception of amino, phenol, and naphthol sulpho acids, 12q). (Cf. gr. 24.)
24. Organic sulphur compounds such as ichthyol, thiol, etc.
25. Hydrated cyclic compounds.
26. Miscellaneous organic compounds (excepting gr. 1-25, also 12 p and q).
27. General chemical processes of organic chemistry.

## 12p. Nitrogen Rings and Nitrogenous Compounds of Unknown Constitution.

## NITROGEN RINGS (heterocyclic compounds) WITH ONE NITROGEN ATOM. (Gr. 1-5.)

1. Six-membered carbon-nitrogen rings with one nitrogen atom (pyridin, chinolin, acridin and hydro derivatives).
2. Five-membered carbon-nitrogen rings with one nitrogen atom. (Pyrrol, indol, carbazol.)
3. Oxygen-nitrogen rings (e. g., oxazoles, oxazines, morpholines).
4. Sulphur-nitrogen rings (e. g., thiazoles, thiazines).
5. Miscellaneous nitrogen rings with one nitrogen atom, except gr. 1-4.

## NITROGEN RINGS (heterocyclic compounds) WITH TWO OR MORE NITROGEN ATOMS. (Gr. 6-10.)

6. Pyrazines and chinoxalines.
7. Derivatives of purin and pyrimidin.
8. Pyrazol derivatives.
9. Imid azoles and thiobiazoles.
10. Miscellaneous heterocyclic compounds with two or more nitrogen ring atoms, except gr. 6-9.

## ALKALOIDS, ALBUMINOUS SUBSTANCES AND OTHER NITROGENOUS COMPOUNDS OF UNKNOWN CONSTITUTION. (Gr. 11-16.)

11. Alkaloids in general. (Cf. gr. 14.)
12. Cinchona alkaloids.
13. Solanaceae alkaloids and the like (e. g., atropin, ecgonin, tropin, also cocain and aceton amines).
14. Opium alkaloids. (Morphine, codein, etc.)
15. Nitrogenous bases of unknown constitution. (Cf. gr. 5 and 10, also alkaloids, gr. 11.)
16. Albumenoids in general (compounds and derivatives). (See albuminous food stuffs 53i; albuminous pharmaceutical preparations, 30h, 8.)

## 12q. Amines, Phenols, Naphthols, Amino-Phenols, Amino-Naphthols.

## AMINES, EXCEPTING THOSE OF THE ANTHRACENE SERIES AND THEIR DERIVATIVES. (Gr. 1-13.)

1. Amines of the benzol series and derivatives, also aliphatic amines. (Cf. gr. 3-5 and gr. 9.)
2. Amines of the naphthaline series. (Cf. gr. 3-5 and gr. 9.)
3. Preparation of amines by reduction.

## 12q—Continued.

4. Separation of mixtures of amines.
5. Alkylizing and arylizing amines.
6. Amino acids, excepting naphthylamine sulpho acids. (Cf. gr. 7-8.)
7. Naphthylamine mono-sulpho acids.
8. Naphthylaminedi- and poly-sulpho acids.
9. Amines obtained by condensation of amines with formaldehyde.
10. Nitrosoamines.
11. Diazo compounds (especially the stable ones).
12. Azo, azoxy, and hydrazo compounds. (Cf. gr. 11 also 22a, azo, azoxy, and hydrazon dyes.)
13. Hydrazine compounds.

## PHENOLS, EXCEPTING THOSE OF THE ANTHRACENE SERIES, INCLUDING NAPHTHOLS, AND THEIR DERIVATIVES. (Gr. 14-31.) (Cf. gr. 38.)

14. Preparation and separation of phenols and phenol ethers. (Phenols with aldehyde groups or oxaldehydes, 12o, 9, and phenols with unsaturated atom chains, 12o, 20.)
15. Nucleus substitution in phenols by negative substituents (e. g., the nitro groups, chlorine, bromine or iodine, but not including the sulpho groups).
16. Nucleus substitution in phenols by organic radicals.
17. Naphthols.
18. Thio-phenols and thio-naphthols.
19. Phenolphthaleins.
20. Phenols obtained by condensation of phenols with formaldehyde.
21. Phenol esters.
22. Phenol sulpho acids.
23. Naphthol sulpho acids by means of alkali fusion or hydrolysis.
24. Di- and poly-oxynaphthaline sulpho acids by means of alkali fusion or hydrolysis.
25. Naphthol sulpho acids from naphthylamine sulpho acids.
26. Di- and poly-oxynaphthaline sulpho acids from naphthylamine sulpho acids.
27. Naphthol sulpho acids by direct introduction of sulphur.
28. Di- and poly-oxynaphthaline sulpho acids by direct introduction of sulphur.
29. Phenol carbon acids. (Cf. gr. 30.)
30. Naphthol carbon acids.
31. Phenol and naphthol carbon acid esters.

## AMINO PHENOLS EXCEPTING THOSE OF THE ANTHRACENE SERIES, INCLUDING AMINO-NAPHTHOLS, AND THE LIKE. (Gr. 32-36.)

32. Amino phenols (also aliphatic oxyamino compounds).
33. Amino naphthols.
34. Amino phenol sulpho and carbon acids.
35. Mono-amino naphthol sulpho acids.
36. Di- and poly-amino oxynaphthalines and their sulpho acids.

## ANTHRACENE DERIVATIVES. (Gr. 37-38.)

37. Amino anthracene compounds and derivatives (amino-oxy, nitroxy, nitroamino, and nitroamino-oxy anthracene compounds). (Anthracene dyes, 22b.)
38. Oxyanthracene compounds (also oxyanthrachinon, but anthrachinon, 12o, 10; and nitrooxyanthracene, gr. 37). (Anthracene dyes, 22b.)



**12r. Distillation of Tar, Extraction of Wood Vinegar, Etc.** (Acetic acid, 12o.)

1. Tar distillation (also purification of the tar oils in general.) (Cf. 10a, 22, 28.)
2. Wood-vinegar extraction and the like. (Cf. 12o, 12, acetic acid.)

**CLASS 13.—STEAM BOILERS AND EQUIPMENT** (not including furnaces, class 24), **ALSO DISTRIBUTION OF STEAM.****13a. Steam Boilers** (exclusive of those for heating, class 36c).

1. Steam-boiler structure in general (shell covering, etc.).

**CYLINDRICAL AND FLUE BOILERS.** (Gr. 2-5.)

2. Cylindrical and flue boilers (without water tubes), combined cylindrical and flue boilers.
3. Flue boilers with water tubes in the fire tube.
4. Cylindrical and flue boilers combined with water-tube boilers
5. Cylindrical and flue boilers combined with multi-tubular boilers.

**WATER-TUBE BOILERS.** (Gr. 8-18.)

6. Vertical water-tube boilers with fire box, also same with radial water tubes.
7. Water-tube boilers with upper and lower cylinder tubes combined.
8. Water-tube boilers with tubes depending from an upper drum.
9. Water-tube boilers with vertical sections.
10. Water-tube boilers with two flat headers.
11. Water-tube boilers with one flat header.
12. Water-tube boilers with broad headers.
13. Water-tube boilers with divided headers.
14. Water-tube boilers with horizontal sections. (Root, Belleville, etc.)
15. Boilers consisting entirely of tubes.
16. Water-tube boilers with serpentine tubes.
17. Water-tube boilers with heating flues extending through the water tubes.
18. Water-tube boilers combined with fire-tube boilers.

19. Vertical boilers with vertical flues.
20. Locomotive and portable boilers.
21. Marine flue boilers.
22. Various boilers with horizontal flues, not elsewhere mentioned. (Cf. gr. 25.)
23. Steam boilers with means for injecting feed water.
24. Steam boilers with two or more superposed layers of water.
25. Various boilers not elsewhere included (exclusive of gr. 2-24). (Cf. gr. 22.)
26. Tube shapes, inserts in tubes [ferrules], protection of tubes against burning, etc., in connection with boilers.

**13b. Preheating and Mechanical Purification of Feed Water, Feeding, Regulation of the Circulation.**

1. Apparatus for promoting circulation in steam boilers.

**PREHEATERS FOR STEAM BOILER FEED WATER.** (Gr. 2-4.)

2. Feed-water heaters with preheating in water tubes.

**13b—Continued.**

3. Feed-water heaters with heating flues, also those without tubes but with water and heating medium separated.
4. Feed-water heaters which introduce the heating medium into the water.

**PURIFICATION OF FEED WATER AND BOILER WATER.** (Gr. 5-9.)

5. Solely mechanical feed-water purification. (Settling, filtering, and oil-separating apparatus.)
6. Purification of feed water by heating.
7. Mechanical feed-water purifiers with apparatus for addition of chemicals. (Cf. 85b, 1.)
8. Boiler water purifying inside the boiler.
9. Boiler water purifying by circulation, with sediment collectors outside the boiler.

**BOILER FEEDERS.** (Gr. 10-12.) (Cf. gr. 14 and gr. 16.)

10. Automatic feeders with pressure compensation by means of a float-operated steam valve.
11. Automatic feeding without a float, by a standpipe or by means of a manually operated valve.
12. Return of the condensation water and waste steam to the boiler by injectors. (Cf. 59c, 1-3, 11-15.)

**BOILER FEED REGULATORS.** (Gr. 13-17.)

13. Feed regulators which control the introduction into the pressure pipe.
14. Feed regulators which control the pump movement.
15. Boiler feeders and feed regulators with swinging tanks.
16. Feed regulators operating by expansion of solid or fluid bodies, also electric regulators.
17. Boiler feeders and feed regulators with mechanically moved feeding space.

18. Miscellaneous devices for boiler feeding: Valves, contrivances for separating air from the feed-water, and control apparatus. (Cf. 13c, 3, 23.)

**13c. Water Gauges, Signals, and Safety Devices.** (For steam boilers; water gauges, 42c, 26, 27; 74b, 1.)**STEAM BOILER WATER GAUGES AND APPURTENANCES.** (Gr. 1-13.)

1. Gauges with automatically closing ball valves.
2. Gauges with automatically closing cocks.
3. Gauges with automatically closing valves in the transverse pipes.
4. Gauges with automatically closing valves coaxial with the gauge glass.
5. Cocks, valves, and slide valves for steam boiler water gauges.
6. Fastenings and packing for the gauge glass.
7. Means for making visible the position of the water in boiler gauges.
8. Cleaning the passages in gauges.
9. Gauges comprising floats. (Cf. 42c, 27; 74b, 1.)
10. Safety devices for gauges.
11. Electrical gauges.
12. Miscellaneous gauges not included in Gr. 1-11.
13. Miscellaneous appliances for steam boiler water gauges.

**SIGNALS AND SAFETY DEVICES FOR STEAM BOILERS,** (e. g., low-water alarms.) (Gr. 14-30.)

14. Testing valves and try cocks on steam boilers.
15. Steam boiler low-water alarms with magnets.

## 13c—Continued.

16. Steam boiler low-water alarms with floats.
17. Electric low-water alarms.
18. Steam boiler low-water alarms which depend upon the expansion of solid or fluid bodies.
19. Steam boiler safety devices with fusible plugs.
20. Steam boiler safety devices which extinguish the fire.
21. Steam boiler safety devices to guard against excessive pressure. (Cf. gr. 24-30)
22. Steam boiler safety devices to prevent retardation of boiling.
23. Miscellaneous safety and control devices for steam boilers. (Cf. 13b, 18.)
24. Load and lever arrangements for safety valves on steam boilers.
25. Means for preventing overloading the safety valves on steam boilers.
26. Steam boiler safety valves with pistons or plate springs.
27. Steam boiler safety valves with multiple seats.
28. Steam boiler safety valves with increase of the pressure surface. (High lift.)
29. Miscellaneous safety valves for steam boilers not included in gr. 26-28.
30. Miscellaneous appliances for steam boiler safety valves.

## 13d. Distribution, Drying, Superheating of Steam, Steam Traps.

1. Steam distributing appliances in general.

## STEAM SUPERHEATERS. (Gr. 2-11.)

2. Tube superheaters in general.
3. Superheaters for locomotive and portable boilers.
4. Superheaters for marine boilers.
5. Superheaters for fire-tube boilers in general.
6. Superheaters for flue boilers.
7. Superheaters for water-tube boilers.
8. Superheaters with separate firing.
9. Miscellaneous superheaters not included in gr. 1-8.
10. Miscellaneous devices for superheaters.
11. Regulating the superheating of steam.

## STEAM TRAPS. (Gr. 12-25.)

12. Steam traps with expansion rods.
13. Steam traps with expansion tubes.
14. Steam traps with expansion liquid.
15. Steam traps with pistons or diaphragms.
16. Steam traps with closed floats and levers.
17. Steam traps with closed floats without levers.
18. Steam traps with open floats and with levers.
19. Steam traps with open floats and without levers.
20. Steam traps with bell floats.
21. Steam traps with oscillating receptacles.
22. Steam traps with capillary passages.
23. Steam traps for low-pressure steam.
24. Miscellaneous steam traps not included in gr. 12-23.
25. Miscellaneous appliances for steam traps.

## WATER AND OIL SEPARATORS. (Gr. 26-30.)

26. Water separators operating by centrifugal force and rotary water separators.
27. Water separators with impact surfaces. (Screens, angle irons, steps, etc.).
28. Water separators in which deflection of the steam occurs.
29. Miscellaneous water separators not included in gr. 26-28.
30. Oil separators. (Cf. gr. 26-29; 14g, 8.)

## 13e. Cleaning of Boilers and Boiler Tubes.

1. Cleaners for the exterior of boiler tubes.
2. Brushes for steam boiler and tube cleaning.
3. Cleaners for the interior of steam boiler tubes (scrapers, cutters, knives).
4. Tube cleaners with hammers.
5. Blowing off and blowing out boiler tubes. (Cf. 24g, 4.)
6. Blowing out steam boilers, preheaters, etc.
7. Miscellaneous devices for steam boiler and tube cleaning. (Cf. 24g, 4.)

## 13f. Fastening and Expanding of Tubes. (Tools, class 7c.)

1. Fastening and expanding of tubes for steam boilers, preheaters, and superheaters. (Cf. 7c, 20).
2. Leak stoppers for steam boilers, preheaters, and superheaters.

## 13g. Special Methods of Producing Steam, also Heating of Boilers by Previously Heated Materials, as hot slag, fluid metals, etc., and Inclosed Firing (the flame acting directly upon the water)

1. Steam production inside a capillary space.
2. Steam production by means of hot solids or melted masses; heat reservoirs.
3. Steam production by means of hot fluids, as vapors, gases, air.
4. Steam production from superheated water, by electricity or through mechanical influences.
5. Steam production by means of heated lye.
6. Steam production by means of inclosed firing. (Cf. 36c, 2.)
7. Special varieties of steam production not included in gr. 1-6.

## CLASS 14. STEAM ENGINES, INCLUDING LOCOMOTIVE AND MARINE ENGINES. ALSO EXPANSIVE FLUID ENGINES FOR WHOSE OPERATION NO POWER MEDIUM IS SPECIFIED AND THOSE FOR STEAM AND OTHER POWER MEDIUMS.

## 14a. Steam Engines with Reciprocating Pistons.

1. Steam engines for locomotives (general arrangement and driving gear).
2. Portable engines and small steam motors.
3. Single-acting steam engines with one, two, or three cylinders. (Cf. 14a, 13, 14.)
4. Double-acting high-pressure engines.
5. Compound steam engines with double and multiple expansion.
6. Tandem engines.
7. Differential pistons for steam engines.
8. Arrangement of multiple pistons in one cylinder in steam engines; also opposed pistons.
9. Steam engines without connecting rods (special arrangements).
10. Movable cylinders (also telescopic) for steam engines.
11. Oscillating cylinders for steam engines.
12. Steam engines with cylinders parallel to the main shaft.
13. Radial engines with rotary cylinders.
14. Radial engines with fixed cylinders.
15. Balancing in steam engines, and devices for compensating for expansion of separate parts.
16. Elements of steam engines, e. g., stuffing boxes. (Cf. 47f, 23-26.)
17. Uni-directional-flow steam engines.



**14b. Steam Engines with Rotary or Oscillating Pistons.**  
(Cf. 27c, 1, 2, 11; 46a, 23, 24; 59c, 2-5.)

1. Steam engines with rotary pistons and one or more flat slide valves seated in the cylinder wall.
2. Steam engines with rotary pistons and one or more wings or rotary resistance elements seated in the cylinder wall.
3. Steam engines with one or more flat slides in the piston body acting as rotary pistons.
4. Steam engines with one or more wings or rotary valves in the piston body acting as rotary pistons.
5. Steam engines with alternately driven and fixed pistons [alternating piston engines], and with pistons of different angular velocities.
6. Engines with intermeshing gear pistons. (Cf. gr. 2 and gr. 4.)
7. Steam engines with oscillating pistons.
8. Special constructions of steam engines with rotary or oscillating pistons.
9. Miscellaneous elements of steam engines with rotary or oscillating pistons (packing, valve gears, etc.).

**14c. Steam Turbines.**

1. Steam impact wheels.
2. Steam reaction wheels.
3. Friction-operated steam turbines and screw turbines. (Water turbines, 88a.)
4. Pressure steam turbines (impulse or velocity steam turbines).
5. Reaction (expansion) turbines.
6. Steam turbines with nozzles and blades running in opposite directions.
7. Reversing, regulating, and balancing of steam turbine.
8. Methods of operating steam turbines with the assistance of a mixture of steam with water or mercury, etc. [injector turbines].
9. Methods of operating steam turbines with superheating and drying of the steam.
10. Appurtenances of steam turbines (bearings, blade fastenings, lubrication, packing, etc.). (Bearings for water turbines, 88a, 7.)
11. Condensers for steam turbines.
12. Driving machines by means of steam turbines.

**14d. Slide Valve Gears (flat and piston valves).** (Slide valve structure, 47g.)

**SLIDE VALVES FOR STEAM ENGINES.** (Gr. 1-10.) (Cf. gr. 11-12.)

1. Plain [D] slide valves. (Cf. 46b, 4; 47g, 26, 29.)
2. Drag valves [Farcot's].
3. Main [distribution] valves with cut-off valves.
4. Meyer valves.
5. Rider valves.
6. Slide valves within which valves or other control elements are located.
7. Piston valves. (Cf. 46b, 4; 47g, 28.)
8. Annular slide valves.
9. Slide valves with longitudinal and transverse movements.
10. Divided slide valves.
11. Balancing of slide valves. (Cf. 47g, 34.)

**VALVE AND REVERSING GEARS FOR SLIDE VALVES FOR STEAM ENGINES.** (Gr. 12-25.) (Gr. 14-19 comprise gears for engines without flywheels, cf. 5b, 1, 4; 87b, 2.)

12. Driving devices for valve gears with or without expansion and arrangements for a central driving means for the valve gear members. (Cf. 46b, 1.)

**14d—Continued.**

13. Control of steam engines by the piston or the piston rod.
14. Movement of the valve by the steam alone, with and without special control pistons.
15. Valve control with preliminary actuation by means of the steam.
16. Valve control with preliminary actuation by the piston rod [two valves, one actuated by piston to start the other].
17. Movement of the valve by impact of the piston.
18. Movement of the valve through the operation of the piston rod. (Cf. gr. 19.)
19. Movement of the valve through the operation of the piston rod, with expansion. (Cf. gr. 18.)
20. Reversing by interchanging the admission and exhaust. (Cf. 46b, 6.)
21. Reversing and changing the admission by shifting the eccentric.
22. Reversing and changing the admission by slide rods or links [Stephenson motion].
23. Reversing devices (driving devices, rods). (Cf. 46b, 6.)
24. Cataract valve gears.
25. Control of steam engines by fluid pressure.

**14e. Rotary Valve Gears (tubular and disk valves and cocks) and Other Valve Gears not Specified Under d, e, f.** (Cock structure, 47g.)

1. Tripping Corliss valve gear.
2. Positive Corliss valve gear.
3. Valve gears with oscillating cylindrical valves. (Tubular valves.)
4. Valve gears with rotating cylindrical valves. (Tubular valves.)
5. Valve gears with oscillating disks.
6. Valve gears with rotary disks.
7. Electrically driven valve gears, including those with poppet valves.
8. Regulating apparatus for valve gears.

**14f. Drop or Poppet Valve Gears for Steam Engines.** (Valve structure, 47g; poppet valve control for internal combustion engines, 46b, 1-6; electric poppet valve gears, 14e, 7.)

1. Tripping valve gears in general. (Cf. gr. 2.)
2. Tripping valve gears with positively moved trip levers.
3. Valve gears with shaft governors.
4. Positive valve gears with variable direction of transmission, and also with direct drive.
5. Positive valve gears with double eccentric drive (links).
6. Positive valve gears with variable drive from a single eccentric point.
7. Valve gears with oscillating or rotating cams.
8. Valve gears with positive opening and closing, including those operated by air or steam.
9. Dash pots, balancing devices, and elements of valve gears for steam engines.
10. Valve arrangement on steam cylinders and valve reversing gears.

**14g. Steam Engine Accessories, Including Compensating Devices for Pumps and Blowers Without Flywheels; Condensers** (so far as they affect the operation of the engine, otherwise class 17d).

1. Steam inlet and cut-off valves.
2. Starting devices for compound steam engines.
3. Cut-off, governing, braking, and safety devices for steam engines. (Cf. 35a, 22, 23.)
4. Regulating devices for the exhaustion in receivers or condensers (in connection with steam engines).

## 14g—Continued.

5. Draining and emptying devices on steam cylinders [relief valves], means for releasing the connection between piston and connecting rod.
6. Heating, cooling, and heat insulating for steam engines.
7. Lubrication of steam engines.
8. Oil separators for steam engines. (Cf. 13d, 30.)
9. Devices in connection with steam engines for measuring, starting, varying the clearance, and other apparatus affecting the compression, etc.
10. Features relating to the exhaust and mufflers for steam engines. (Cf. mufflers, 30d, 29; 46c, 29 and 30; 72a, 28.)
11. Compensating devices for steam pumps and blowers without flywheels.
12. Condensation appliances for steam engines. (Cf. 12a, 4; 14c, 11; 17d, 5; 89c.)
13. Surface condensers for steam engines, provided they affect the operation of the latter. (Otherwise see 17d.)
14. Condenser pumps for steam engines.

## 14h. Methods of Utilizing the Energy of the Steam.

1. Returning the exhaust steam to the boiler, and other general methods of operation. (Cf. 13b, 12.)
2. Application of the steam from steam engines to particular uses (e. g., for heating, cooking, drying).
3. Utilization of exhaust steam from steam engines (heat reservoirs) and the exhaust from gas engines to produce steam for steam engines.
4. Superheating and direct heating of the steam for steam engines and production of steam in the cylinder.
5. Methods of operation for driving steam engines by hot water, by a mixture of steam and air or vapors of various liquids.

**CLASS 15.—PRINTING, RULING MACHINES, TYPEWRITERS, STAMPS.** (Printing textiles, wall paper and linoleum, 8c, n.)

## 15a. Elements, Implements, and Machines for Setting and Distributing Type.

## PARTS AND IMPLEMENTS FOR HAND COMPOSING. (Gr. 1-10.)

1. Type characters of all kinds (for book printing).
2. Justifiers or spaces for typesetting.
3. Rules, including brass rules, for typesetting. (Cf. gr. 8.)
4. Furniture for typesetting (sticks, form sticks).
5. Chases.
6. Locking-up implements for typesetting. [Quoins.]
7. Type cases, desks and stands for typesetting, also cleaning of the same.
8. Composing sticks and composing rules for typesetting. (Cf. gr. 3.)
9. Galleys, column galleys, and column locks for typesetting.
10. Hand implements for typesetters.
11. Forms, characters, lines, etc., for rotary [web] printing for "latest news."
12. Music typesetting.

## TYPESETTING AND DISTRIBUTING MACHINES AND RELATED MATTER. (Gr. 13-22.)

13. Handsetting apparatus.
14. Setting machines for setting with ready-made type, and details thereof.

## 15a—Continued.

15. Distributing machines for ready-made type, and details thereof.
16. Justifying mechanism for setting with ready-made type, and details thereof.
17. Matrix setting and line casting machines with justifying mechanism, and details thereof.
18. Setting machines which stamp or cast and set type, and details thereof.
19. Stamping machines for characters or lines for type-setting, etc.
20. Stamping machines for matrix strips and plates.
21. Perforated-strip punching machines.
22. Miscellaneous details of setting machines of all kinds, e. g., keyboard arrangements, perforated-strip controlling mechanism (cf. 17, 18), etc., including signal devices.

## TYPE CASTING. (Gr. 23-29.)

23. Matrices for type casting, their manufacture and use.
24. Hand-casting instruments for type casting.
25. Type-casting machines.
26. Complete operation type-casting machines [casting and dressing].
27. Implements and machines for dressing and finishing type.
28. Rule apparatus for type casting. [Rule cutters, benders, etc.] (Cf. 15f; 70c, 11.)
29. Space cutters, for making spaces or justifiers for type setting.
30. Miscellaneous matter relating to the art, details, implements, and machines for producing and distributing type, not included in gr. 1-29.

## 15b. Processes for the Manufacture and Reproduction of Printing Surfaces (except photomechanical. 57d).

1. Processes for manufacture of printing surfaces in general, exclusive of photomechanical means, e. g., by drawing, transferring, etching (cf. 48a, 16; 48d, 1; 75b, 10), etc. (Cf. 57d, 2; engraving, 75a, 6-12; 75b, 10.)
2. Processes for reproduction and duplication of printing surfaces by stereotyping (cf. 15c), or electroplating (cf. 48a, 7).
3. Processes for the production of surfaces for color printing (except for photomechanical printing). (Cf. 57d, 3.)
4. Processes for the production of printing surfaces for special work (except photomechanical printing), e. g., for negative printing, tinted impressions, etc., or with special auxiliary means. (Cf. 57d, 4.)
5. Processes for the production of printing surfaces (except for photomechanical reproduction 57d, 5), upon plates which have other than plane surfaces, especially cylinders. (Cf. 15d, 33.)
6. Processes for making printing grain. (Cf. 57d, 5 and 7.)

## 15c. Apparatus for Reproducing Printing Surfaces (except by electroplating).

## STEREOTYPING. (Gr. 1-4.)

1. Apparatus and tools for making stereotype matrices.
2. Instruments for casting flat and curved stereotypes.
3. Appliances for finishing stereotype plates and bending mechanism for printing plates.
4. Plate underlays, and fastening the plates upon the underlays. (Cf. 15d, 30.)

5. Elastic pantographs. (Cf. 42a, 16.)



**15d. Printing Presses and Machines, Including Those For Color Embossing and Stencil Printing; Printing Processes, so far as They Involve the Use of Special Machines.**

**BED AND CYLINDER PRESSES AND THEIR ELEMENTS.** (Gr. 1-17.) (Cf. gr. 24, 28, 30, 31, 32.)

1. Single cylinder presses, including those with a swinging cylinder.
2. Bed and cylinder presses with constantly rotating impression cylinder. (Cf. gr. 28.)
3. Double [multirevolution] bed and cylinder presses.
4. Perfecting bed and cylinder presses.
5. Bed and cylinder presses with fixed bed, and rolling impression cylinder; also those with oppositely moved bed and cylinder.
6. Bed and cylinder presses for multicolor printing.
7. Lithographic hand presses.
8. Lithographic power presses, metal plate, and photogravure power presses and elements thereof.
9. Copperplate and steel plate hand and power presses.
10. Bed movement devices for bed and cylinder presses.
11. Cylinder movements and brakes for bed and cylinder presses.
12. Gripper devices for bed and cylinder presses.
13. Sheet registering devices (hand fed) for bed and cylinder presses and rotary machines.
14. Sheet shifters and spreaders for bed and cylinder presses and rotary machines.
15. Sheet delivering devices for bed and cylinder presses. (Cf. gr. 25.)
16. Paper guides of special construction for bed and cylinder presses, and rotary machines.
17. Miscellaneous matter relating to bed and cylinder presses.

**ROTARY [web] PRESSES AND THEIR ELEMENTS.** (Gr. 18-32.) (Cf. gr. 13, 14, 16.)

18. Rotary perfecting presses.
19. Rotary presses for variable sizes of forms.
20. Rotary presses for multicolor printing with one or more pressure cylinders and one or more form cylinders.
21. Rotary presses of special construction (for calendar blocks, etc.).
22. Rotary presses for lithographic printing. (Cf. gr. 28.)
23. Rotary presses for printing and embossing.
24. Antioffset devices for bed and cylinder presses and rotary machines.
25. Folding, cutting, collecting, and discharging devices on rotary and bed and cylinder presses. (Cf. 15e, 1.)
26. Form cylinders of special construction (with type seats, movable impression plates).
27. Devices for moistening the paper for printing on rotary presses.
28. Safety and protective devices on rotary and bed and cylinder presses. (Cf. gr. 2, 22; 47a, 18.)
29. Miscellaneous matter connected with rotary presses of gr. 18-28. (Cf. gr. 17.)
30. Plate fastening for rotary and bed and cylinder presses. (Cf. 15c, 4.)
31. Inking mechanism for rotary and bed and cylinder presses.
32. Apparatus and machines for printing from "Sam-melformen." [Multicolor plates inked in different patterns by separate inking rolls.]

33. Devices for production and reproduction, especially copying of lithographic forms and rolls. (Cf. 15b, 5; 57d, 5.)

**15d—Continued.**

34. Stencil printing devices and machines for typographic use (cf. 8c, 8; 8h, 3, 5; 8l, 1, 2; 54b, 7; 75c, 25); ink ribbon printing presses.

**PLATEN PRESSES AND APPURTENANCES.** (Gr. 35-44.)

35. Platen presses for single color printing.
36. Platen presses for multicolor printing.
37. Perfecting platen presses.
38. Inking mechanism for platen presses.
39. Feeding and discharge devices for platen presses.
40. Impression throw-off, and throw-out devices for platen presses.
41. Safety and protective devices for platen presses. (Cf. 47a, 18.)
42. Miscellaneous matter relating to platen presses not included in gr. 35-41.
43. Embossing presses with wiping apparatus.
44. Platen (stamping) and embossing presses for printing without color; gold printing; black and color embossing. (Cf. 54d, 1.)

**15e. Auxiliary Machines and Apparatus for Printing, for Folding, Perforating, Bronzing, Bordering.**

1. Independent folding devices and elements thereof (devices for lifting, feeding, placing and holding the sheet), and folding machines. (Cf. 15d, 25.)
2. Perforating devices for printing presses and the like (Cf. 7c, 11; perforating stamps, 15h, 2.)
3. No patents. [Formerly perforating stamps.]
4. Bronzing machines and elements thereof, bronzing implements.
5. Devices for bordering sheets, envelopes, etc.

**AUTOMATIC SHEET FEEDING DEVICES FOR POWER PRESSES AND OTHER MACHINES.** (Gr. 6-11.)

6. Devices for feeding out the sheet by means of friction rolls, bands, fingers, etc.
7. Devices for lifting separate sheets by means of adhesives.
8. Devices for feeding out the sheets by means of needles.
9. Devices for lifting separate sheets by suction.
10. Special devices for automatic feeding of sheets.
11. Mechanism for lifting or moving the stack table. [table elevating].

12. Automatic feeding mechanism for cards, envelopes, and the like for printing and like machines.
13. Independent address printing devices and machines. (Cf. 81a, 8.)
14. Manufacture of ink rolls for printing presses and casting mechanism for the same. (Materials, 151.)
15. Mechanism for guiding the rolls in and out in power presses, etc.
16. Mechanism for cleaning forms and rolls, and roll storing.
17. Miscellaneous auxiliary machines and apparatus for book printing not included in gr. 1-16.

**15f. Ruling Machines** (without special groups. Cf. 15a, 28; 70e, 11.)

**15g. Typewriters and Appurtenances.**

**TYPEWRITERS DISTINGUISHED BY THE CHARACTER OF THE TYPE CARRIER.** (Gr. 1-14.)

1. Type-lever typewriters. (Cf. gr. 25.)
2. Type-wheel typewriters with keys.

**15g—Continued.**

3. Type-wheel sector typewriters with keys.
4. Type-cylinder typewriters with keys.
5. Type-disk typewriters with keys.
6. Type-wheel machines with pointers or indicators. (Cf. gr. 7, 8, 9.)
7. Type-wheel sector machines with pointers or indicators. (Cf. gr. 6, 8, 9.)
8. Type-cylinder machines with pointers or indicators. (Cf. gr. 6, 7, 9.)
9. Type-disk machines with pointers or indicators. (Cf. gr. 6, 7, 8.)
10. Type-plate machines.
11. Type-rod machines. [Type on ends of rods, movable endwise.]
12. Type-bar machines. [Type on faces of short bars, bodily movable.]
13. Type band or rule machines. [Type on single band or bar.]
14. Typewriters with spherical type carriers.

**TYPEWRITERS DISTINGUISHED BY THEIR USE. (Gr. 15-20.)**

15. Book typewriters.
16. Tabulating typewriters.
17. Music typewriters.
18. Stenographic typewriters.
19. Typewriters for the blind. (Cf. 42n, 2; 70d, 13.)
20. Cryptographic typewriters. (Cf. 42n, 14.)

**TYPEWRITERS DISTINGUISHED BY THE NATURE OF THE DRIVING MEANS. (Gr. 21-24.)**

21. Pneumatic typewriters.
22. Hydraulic typewriters.
23. Typewriters with electric drive. (Cf. 21a, 16.)
24. Typewriters with automatic motion for producing a plurality of copies.

**OPERATING AND SHIFTING DEVICES FOR TYPEWRITERS (Gr. 25-31.)**

25. Type-lever operating devices on typewriters. (Cf. gr. 1.)
26. Case-shifting mechanism. [For shifting platen or type case.]
27. Carriage-feed mechanism, without special means for returning the carriage
28. Line-spacing mechanism.
29. Mechanism for returning the carriage.
30. Mechanism for forward feeding and returning of the carriage.
31. Feeding mechanism for the platen for forming the lines in the direction of rotation of the platen. [Annular printers.]

**DETAILS OF TYPEWRITER CARRIAGES. (Gr. 32-36.)**

32. Margin stops with and without line-locking mechanism.
33. Indicators for the position of the carriage.
34. Carriage guides.
35. Paper-feeding mechanism.
36. Platens and their mounting.

**INKING MECHANISM ON TYPEWRITERS. (Gr. 37-39.) (Cf. gr. 1-14.)**

37. Inking devices with ribbons.
38. Inking devices with pads.
39. Inking devices with rolls.

**15g—Continued.****OTHER ELEMENTS OF TYPEWRITERS, EXCLUSIVE OF MOVING AND FEEDING MECHANISM, CARRIAGES, AND INKING DEVICES. (Gr. 40-45.)**

40. Key mechanism. (Cf. gr. 1-5.)
41. Type-lever actions. (Cf. gr. 1 and 25.)
42. Printing hammers.
43. Mechanism for making the writing visible.
44. Mechanism for counting the letters, words, lines, and pages.
45. Miscellaneous contrivances for typewriters other than in gr. 1-44.

**46. Copy holders for typewriters.****15h. Hand Stamps, Stamping and Numbering Mechanism. (Stamps with counting apparatus, class 43a; branding stamps, class 75a)**

1. Hand stamps (flat, roll, and ribbon stamps), stamp pliers without counting apparatus. (For same with counting apparatus, see 43a, 21.)
2. Hand printing devices, type holders, and independent perforating apparatus. (Cf. 15e, 2; 54d, 3.)
3. Stamp pads; inking devices for hand stamps.
4. Letter-stamping devices and machines. (Cf. 43a, 24.)
5. Card and ticket printing devices.
6. Numeral mechanism and numbering devices for printing.
7. Miscellaneous matter relating to hand stamps; stamping and numbering mechanism not included in gr. 1-6.

**15i. Duplicating Mechanism. (Stencil printing under d.)**

1. Copy presses.
2. Copying machines for documents. (Photographic, 57c, 11.)
3. Writing desks and the like with means for reproducing the writing below the surface. (Cf. 34i, 8.)
4. Copy blocks [reproducing below the surface]; copying books.
5. Hectographs. (Hectograph materials, 15l, 4.)
6. Miscellaneous mechanism for reproduction not included in gr. 1-5. (Miscellaneous processes, 15k, 7.)

**15k. Methods of Printing and Duplicating, also Color Embossing (so far as they do not involve the use of special machines, otherwise under d; photo-mechanical reproduction, 57d); Making Ready; Special Printing Products.**

1. Inking and impressing a printing form in general. (Exclusive of photo-mechanical reproduction, 57d, 9.) (Cf. 15h, 3.)
2. The printing together of several colors. (Multi-color and mosaic printing, exclusive of photo-mechanical.)
3. Printing with pastel inks (e. g., grease and varnish colors).
4. Printing with dissolved colors (e. g., for hectographing, etc.).
5. Printing with metal leaf, bronze, and powdered colors. (Cf. 75b, 3-5; 75c, 3, 4.)
6. Embossing. (Cf. 75b, 11, 19.)



## 15k—Continued.

7. Reproduction processes not elsewhere mentioned (exclusive of gr. 3-6, e. g., copying processes, printing in which the design is transferred by use of a hot iron, etc.). (Cf. 15i, 6.)
  8. Printing upon other material than ordinary printing paper, (exclusive of photo-mechanical, 57d, 9, and cloth printing 8n, 1-4; e. g., upon metal, glass, ceramic ware, etc.). (Cf. 75b, 6.)
  9. Printing of special forms (exclusive of photo-mechanical, 57d, 9), e. g., card printing, music printing (music typesetting, 15a, 12), and nature printing. (Cf. 75d, 5.)
  10. Making-ready and otherwise varying the operation of reproducing; also making of printing forms which are "made-ready" in the process of making. (Relief-klichée.)
- 15l. **Materials for Printing, e. g., Plates, Compositions, Special Colors, as for Mosaic Printing. Materials for Moistening and Washing. Flong, etc.**
1. Printing plates of natural and artificial stone; also of stone on metal backing.
  2. Printing plates of metal (e. g., zinc or aluminum).
  3. Printing plates of materials not elsewhere specified (exclusive of gr. 1-2, e. g., of celluloid).
  4. Yieldable printing plates (e. g., transfer sheets, hectograph sheets, etc.)
  5. Printing plates otherwise than plane, especially rollers. (Cf. 8c, and 15d; relief-klichée, 15k, 10.)
  6. Means for preparing, e. g., by grinding, graining (cf. 15b, 6), or chemically cleaning; also the mounting of printing plates. (Cf. 15c, 4.)
  7. Special printing mediums (colors for mosaic printing, inks and water colors for lithographing and autography, etc.); also moistening and washing materials for plates. (Printer's inks in general, 22g, 4.)
  8. Materials for the constituent parts or appurtenances of printing presses (e. g., material for printing rolls, wipers, blankets).
  9. Materials for reproduction of printing forms, especially flong for stereotypy.

**CLASS 16.—PREPARATION OF FERTILIZERS.**  
(No subclasses.)

**INORGANIC FERTILIZERS. (Gr. 1-5.)**

1. Superphosphate.
2. Dicalcium phosphate (precipitate).
3. Thomas slag.
4. Alkali phosphates.
5. Miscellaneous inorganic fertilizers not included in gr. 1-4.

**ORGANIC FERTILIZERS. (Gr. 6-13.)**

6. Fertilizer from meat refuse.
7. Fertilizer from fish refuse.
8. Fertilizer from animal refuse other than in gr. 6-7, as bone meal, blood, leather, horn, hair, wool, feathers, etc.
9. Fertilizer from distillery waste, etc.
10. Fertilizer from stable manure.
11. Fertilizer from night soil.
12. Fertilizer from waste water.
13. Fertilizer from garbage, etc.
14. Miscellaneous organic fertilizers not included in gr. 6-13.

**CLASS 17.—REFRIGERATION, MANUFACTURE, AND STORAGE OF ICE, HEAT TRANSFERRING, MECHANICAL LIQUEFYING OF GASES AND GASEOUS MIXTURES WHICH ARE CONDENSED WITH DIFFICULTY, AS AIR.**

**17a. Refrigerating Machines, Including Compression and Absorption, Vacuum, and Air Expansion Machines.**

1. Compression. (Methods of operation in general.)
2. Compressors for refrigerating machines.
3. Ammonia refrigerating machines.
4. Carbonic acid refrigerating machines.
5. Refrigerating machines operating with sulphurous acid, carbon bisulphide, or hydrocarbons.
6. Simultaneous absorption of heat and development of driving power.
7. Valve gears and valves for refrigerating machines.
8. Regulators for refrigerating machines.
9. Stuffing boxes for refrigerating machines.
10. Separators for refrigerating machines.
11. Lubricating apparatus for refrigerating machines.
12. Condensers for refrigerating machines.
13. Compression-absorption refrigerating machines.
14. Absorption refrigerating machines.
15. Absorbers for refrigerating machines.
16. Cooling devices for absorbers in refrigerating machines.
17. Distilling apparatus for refrigerating machines.
18. Coolers and vaporizers for refrigerating machines.
19. Cooling mediums for refrigerating machines.
20. Cold-air machines.
21. Vacuum refrigerating machines.
22. Miscellaneous refrigerating machines not included in gr. 1-21.
23. Separate elements of refrigerating machines.

**17b. Ice Manufacture and Harvesting. (Refrigerating machines under a.)**

1. Ice manufacture without use of freezing cells; also natural ice production.
2. Ice production in freezing cells.
3. Ice production with stirring mechanism and removal of air.
4. Ice saws, ice cutting, and crushing devices. (Cf. 34b, 5.)
5. Ice production, miscellaneous; also artificial-ice courses. [Slides, rinks, etc.]
6. Apparatus for manufacture of snow and ice cream; also receptacles for transportation of ice cream.

**17c. Ice Cellars, Refrigerators.**

1. Ice cellars; ice houses. (Cf. 37f, 2.)
2. Refrigerators [refrigerating cupboards] and cooling receptacles cooled by ice.
3. Refrigerators and cooling receptacles cooled by cold water, refrigerating mixtures, and other cooling mediums.
4. Details in the construction of refrigerators.
5. Ice wagons and refrigerator wagons. (Cf. 53a.)

**17d. Steam or Vapor Condensers. (Cf. 14c, 11; 14g, 12-14; 17a, 12; 89c, 5.)**

1. Surface condensers.
2. Injector condensers. [Jet.]
3. Steam condensers.
4. Rotary condensers, also centrifugal condensers.
5. Elements of condensers.
6. Condensers for cold vapor machines. [ $\text{NH}_3$ ,  $\text{CO}_2$ , etc.]
7. Miscellaneous condensers not included in gr. 1-6 (e. g., spiral condensers).

**17c. Open Heat-Transferring Apparatus.** (Open coolers for liquids and gases, i. e., coolers in which the liquid or gas comes into immediate contact with the cooling medium, e. g., ice, water, or cold air.)

**OPEN STREAM** [trickling or dripping stream] **COOLERS FOR LIQUIDS AND GASES.** (Gr. 1-3.)

1. Open counter-current stream coolers for liquids and gases (especially cooling towers and cooling stacks for recooling water).
  2. Open transverse-current stream coolers for liquids and gases (e. g., chimney coolers).
  3. Miscellaneous open stream coolers for liquids and gases not included in gr. 1-2.
- 
4. Spray coolers (spray tubes) for liquids and gases.
  5. Coolers with movable distributors for liquids and gases. (Cf. gr. 1, 3, and 4.)
  6. Coolers for cooling air by direct contact with ice, ice water, or other refrigerating fluids.
  7. Miscellaneous open heat-exchange devices (coolers) for liquids and gases not included in gr. 1-6.
  8. Coolers for solid materials in general.

**17f. Inclosed Heat-Transferring Apparatus.**

1. Coolers for beer wort. (Cf. 6b, 15 and 18.)
2. Beverage coolers.
3. Trickling coolers in general.
4. Spiral coolers.
5. Counter-current coolers.
6. Cold-air purifiers.
7. Coolers with means for avoiding formation of frost.
8. Pocket coolers [cooling medium in a pocket or sack]
9. Coolers movable through cold water. (Cf. 6b, 15, 18.)
10. Mechanically moved coolers. (Cf. 6b, 15, 18.)
11. Miscellaneous closed coolers not in gr. 1-10.

**17g. Mechanical Liquefaction of Gases and Gaseous Mixtures Which are Condensed with Difficulty.**

1. Liquefaction of difficultly condensable gases and gaseous mixtures. (Cf. 12i, 14; liquid illuminating gas, 26b, 7.)
2. Separation of liquefied gas mixtures. (Cf. 12i, 14.)

#### CLASS 18.—METALLURGY OF IRON.

**18a. Ore Treatment, Including Preparation of the Ores, Pig-Iron Manufacture, Direct Process, Blast Furnaces, Blast Stoves, Making of Ferro-Silicon and Ferro-Manganese.**

**PRELIMINARY TREATMENT OF IRON ORES FOR EXTRACTION OF IRON.** (Gr. 1-2.) (Cf. 40a.)

1. Roasting, removal of sulphur and phosphorus from iron ores. (Cf. 1b, 2; 18b, 2 and 9.)
2. Binding together and briquetting of iron ores, flue dust, etc. (Cf. 10a, 18; 10b, 9; briquet presses, 80a, 24.)

**PIG-IRON PRODUCTION IN BLAST FURNACES.** (Gr. 3-10.)

3. Blast-furnace operation.
4. Blast-furnace structure, also opening and closing of the tap hole.
5. Blast-furnace tweers and forms.
6. Top closures and charging mechanism for blast furnaces.
7. Prevention of furnace accretions in blast furnaces, etc.

**18a—Continued.**

8. By-products in pig-iron production (flue gases, slag). (Cf. 10a, 19.)
9. Conveyers for blast-furnace slag. [Slag buggies.]
10. Production of ferro-silicon and ferro-manganese.

**HOT-BLAST STOVES FOR BLAST FURNACES.** (Gr. 11-17.) (Blast furnaces, gr. 3-7.)

11. Brick stoves for blast furnaces of the Cowper type, and variations. (Cf. gr. 12-13.)
12. Brick stoves for blast furnaces of the Whitwell type, and variations. (Cf. gr. 11 and 13.)
13. Brick stoves for blast furnaces of the Lurmann type, and variations. (Cf. gr. 11-12.)
14. Linings [internal structure] for brick stoves for blast furnaces.
15. Hot-blast valves for brick stoves.
16. Iron stoves for blast furnaces. Feeding preheated air, etc.
17. Cooling down the blast and drying the air for stoves.

18. Production of iron directly from the ore.
19. Electro-metallurgical treatment of iron ores

**18b. Treatment of Pig Iron, Including Refining, Oxidation of Impurities, Making Malleable Iron and Steel Alloys.**

**PURIFYING PIG IRON.** (Gr. 1-3.)

1. Refining pig iron.
2. Removal of sulphur and phosphorus from pig iron. (Cf. gr. 9; 18a, 1.)
3. Pig-iron mixers.

**MANUFACTURE OF WROUGHT IRON AND WELDING STEEL.** (Gr. 4-7.) ["Schweisseisen" and "Schweiss stahl."] ]

4. Processes for production of wrought iron and welding steel.
5. Single puddling furnaces, including mechanical stirrers for the same.
6. Double puddling furnaces.
7. Oscillatory and rotary puddling furnaces.

**MANUFACTURE OF INGOT IRON AND INGOT STEEL.** (Gr. 8-9.) ["Flusseisen" and "Flusstahl," i. e., readily fusible grades of malleable iron and steel.] ]

8. General processes for refining pig iron.
9. Removal of sulphur and phosphorus in the production of ingot iron. (Cf. gr. 2.)
10. Processes for recarbonizing and deoxidizing of ingot iron.
11. Casting thick blocks of ingot iron and ingot steel with the use of chemical means (e. g., fluxes).
12. Manufacture of crucible steel.
13. Martin process for production of ingot iron and steel.
14. Martin furnaces (only such mechanism as directly affects the working process). (Cf. 24c, 9, reverberatory furnaces.)
15. Charging apparatus for Martin furnaces and heating furnaces. (Cf. 35b, 3.)
16. Working processes in blast refining in Bessemer converters.
17. Details of Bessemer converters.
18. Miscellaneous modifications of the Bessemer converter.
19. Tweers and bottoms for Bessemer converters.



## 18b—Continued.

- 20. Iron alloys.
- 21. Electro-metallurgical treatment of pig iron. (Cf. 21h, 6-10.)

**18c. Hardening and Softening Steel and Iron, Also of Articles, as Tools, etc.: Refining by Heating to Incandescence, Cementation, Tempering.** (Hardening and annealing of other metals, e. g., copper, 48d.)

- 1. Hardening processes (also softening) for steel and iron in general.
- 2. Processes and apparatus for hardening iron and steel articles (e. g., springs, cards, etc.).
- 3. Cementation processes. (Surface carbonization of iron.)
  - 1. Cementation and hardening of armor plates.
- 5. Hardening furnaces for steel and iron. (Cf. 21h; 24c, 31a, 3; 48d, 5; 49f, 6, 17.)
- 6. Annealing and hardening of steel wire. (Cf. 24c; 48d, 5.)
- 7. Annealing of sheet steel and sheet iron. (Cf. 24c; 48d, 5.)
- 8. Annealing and tempering processes for steel and iron. Refining by heating to incandescence.
- 9. Annealing and tempering furnaces for steel and iron. (Cf. 7b, 7; 7e, 6; 21h; 31a, 3; 48d, 5; 49f, 6, 17.)
- 10. Heating furnaces (furnaces in which the charge is pushed through, roll furnaces, welding or reheating furnaces, etc.). Equalizing apparatus [soaking pits] for ingots, rough bar, etc. (Cf. 18b, 15; 24c, 24k; 31c, 31; 35b, 3, 7.)

**CLASS 19. RAILWAY, ROAD, AND BRIDGE STRUCTURE.**

**19a. Permanent Way (except switches, 20i, and special arrangements for electrical operation, 20k), Permanent Way Tools, and Machines for Railways of all Kinds.**

- 1. Track ballast for railways of all kinds (cf. 19c, 1-7; 20k, 1-8), draining, and prevention of creeping of the permanent way, dust and noise prevention in connection with the permanent way.

**SLEEPERS FOR MAIN AND SECONDARY RAILWAYS.** (Gr. 2-6.)

- 2. Wooden ties (prevention of splitting of the ties, tie dowels, etc.).
- 3. Iron crossties.
  - 1. Iron stringers and combined stringers and crossties.
- 5. Separate sleepers [pot sleepers, etc.].
- 6. Sleepers of artificial stone, reinforced concrete, etc. (Cf. 37a, 2; 37b, 1-3.)

**RAILS AND RAIL FASTENERS FOR MAIN AND SECONDARY RAILWAYS.** (Gr. 7-14.)

- 7. Rails.
- 8. Tie-plates for wooden ties and fastening of the rails upon the tie-plates.
- 9. Rail chairs for wooden and iron ties, and fastening of the rails in the chairs.
- 10. Fastening of the rails, tie-plates, and chairs upon the ties by spikes and rail (or tie) screws. (Screw fastenings, 47a, 9-15.)
- 11. Fastening the rails upon iron crossties, and devices for obtaining, changing, and maintaining the gauge and supporting the rails on curves.

## 19a—Continued.

- 12. Fastening the rails upon iron stringers and single [pot] sleepers, and transverse connections (rail-braces) for stringer and single sleeper track structure.
- 13. Devices for fastening and connecting sleeper rails and composite rails.
- 14. Means to prevent creeping of the rails.

**RAIL-JOINT CONNECTIONS FOR MAIN AND SECONDARY RAILWAYS.** (Gr. 15-19.)

- 15. Rail joints in general. (Ordinary fishplate joints, fishplates with supporting flanges and with adjustable keys under the rail ends and in the space within the plates.)
- 16. Fishplate joints with obliquely cut rail ends, and joint connections with overlap (scarf joints), dovetail, and dowel formations of the rail ends.
- 17. Impact fishplates and impact rails.
- 18. Joints with bridge plates. (Cf. gr. 19.)
- 19. Fishplates of special construction (bull-headed fishplates, continuous fishplates, cranked fishplates), emergency joints for rails, etc. (Cf. gr. 18.)

**TRACKS FOR ROADS WITH LIGHT EQUIPMENT, MINE HAULING ROADS, ETC.** (Gr. 20-24.)

- 20. Street-railway rails. (Cf. 20k, 1-8.)
- 21. Street-railway track in general (cf. 19c, 7); street-railway ties (cf. gr. 2-6); draining off water from street-railway rails.
- 22. Rail fastenings and rail-joint connections for street railways.
- 23. Tracks for unusual forms of roads, as inclined roads, cableways, towing roads, single-rail systems, elevated railways, etc. (Cf. 20a; 2-17; 20k, 1-8.)
- 24. Track for field railways, forest railways, and other readily removable roads.

- 25. Tracks for road vehicles. (Cf. 19c, 1-7.)
- 26. Joint connections for rails of all kinds made by welding, soldering, etc. (cf. 21h, 12-14; 49f, 2, 11-18), repairing worn rail joints.

**TRACK IMPLEMENTS AND MACHINES FOR RAILWAYS OF ALL KINDS.** (Gr. 27-31.)

- 27. Track-laying machines.
- 28. Implements and tools of all kinds for working on railway superstructure, as portable tie augers, rail drills (cf. 49a, 27-38), rail tongs, rail cutters, rail benders, rail straighteners, rail lifters (cf. 35d), rail shifters, devices for driving and drawing spikes and screws (cf. 87a, 17), etc.
- 29. Gauge and slope measuring instruments. (Cf. 42c, 6.)
- 30. Devices for tamping ties.
- 31. Portable rail planing and milling machines. (Cf. 49a, 45-56; 49b, 1-10.)

## 19b. Street Cleaning.

- 1. Street-sweeping machines.
- 2. Rail cleaners for street railways. (Cf. 20h, 9.)
- 3. Street washing and scraping machines.
- 4. Street sprinkling. (Materials to be sprinkled on streets, 30i, 7.)
- 5. Devices for scattering sand upon streets.
- 6. Snow and ice removal. (Snow plows, shovels, and melters, ice picks.)

**19c. Paving for Roads and Public Ways, Including Places for Games and Sports.**

1. Broken stone, gravel, and like street-binding materials.
2. Rock pavement. (Cf. house paving, heavy flooring, 37d, 5-7.)
3. Asphalt pavement.
4. Wood pavement.
5. Iron pavement and other pavements of special kinds (as rubber, cork, etc.).
6. Gutters and curbing.
7. Connection of pavement to street-railway superstructure.
8. Road rollers.
9. Paving rams and stamping machines for paving traffic ways. (Cf. 84c, 4.)
10. Road scrapers and devices for tearing up streets.
11. Auxiliary tools and apparatus for laying and repairing pavement. (Making paving stones from mortar, etc., 80a, 50.)

**19d. Bridge Structure, Including Scaffolding.**

1. Stone bridges, also those of concrete and reinforced concrete, and their drainage. (Cf. gr. 2-3.)
2. Wooden bridges and their drainage. (Cf. gr. 1 and 3.)
3. Iron bridges in general, roadways, drainage, pillars and supports, girder bridges, cantilever bridges, arch bridges, and elevated-railway viaducts. (Cf. gr. 1-2 and 4-6.)
4. Suspension and swing bridges.
5. Movable bridges, roll, lift, draw, bascule, and rotary bridges, also railway-station footbridges.
6. Pontoon bridges (floating bridges, excepting the floats and pontoons, 65a, 82), floating wharves, portable bridges, and bridges for military use.
7. Erection scaffolds for bridge building. (Cf. 37e.)

**19e. Substructure for Streets and Railways of All Kinds, Earth and Rock Work (excavators 84d), Retaining and Revetment Walls, Drains and Culverts, Including Appurtenances, as Mile and Boundary Stones, Signposts and Elevation Indicators, Snowsheds, Etc., and Crossings.**

1. Machines for loosening, removing, or binding together earth and rock. (Cf. 19c, 8-10; 45a; 84c and 84d.)
2. Retaining and revetment walls. (Cf. 84a.)
3. Signs for street and railway substructure (kilometer and boundary stones, way and elevation indicators).
4. Snowsheds and snow fences.
5. Railway platforms without special arrangements relating to the operation (cf. 20a, 1), roadbed, including ditches and culverts.

**19f. Tunnel Construction. (Tunnels Under Water, 84c, 5.)**

1. Tunnel construction in mining.
2. Tunnel construction in street and railway building.

**CLASS 20.—RAILWAY OPERATION.****20a. Miscellaneous Roads: Atmospheric, Compressed-Air, Balloon, Sled, Moving-Sidewalk, Rack-Rail, Elevated, Suspended, Cable, Street, Hoisting, and Underground Roads (warehouse systems, class 81c), Including Driving Means Not Falling Under b-d, and the Superstructure so Far as it Depends Upon the Nature of the Operating Means (Otherwise class 19a.)**

1. Stations and platforms, general arrangement (cf. 19e, 5), switch yards, gravity car-handling tracks.

**20a—Continued.****VARIOUS KINDS OF WAYS. (Gr. 2-17.)**

2. Pneumatic railways.
3. Pneumatic railways employing compressed air.
4. Balloon railways.
5. Slide railways.
6. Moving sidewalks.
7. Rack-rail roads.
8. Single-rail elevated roads.
9. Multiple-rail elevated roads.
10. Single-rail ground roads. (Cf. 42c, 42.)
11. Suspended ways. (Suspension roads with rigid track and motor mechanism on the vehicle.)
12. Suspended cableways.
13. Cable street railways.
14. Mine [hoisting] railways. (Cableways to facilitate the ascent of mountains, 77c, 18.)
15. Subways.
16. Inclined ways.
17. Miscellaneous unusual forms of roads not included in gr. 2-16.

**GRIFFERS FOR THE MOTOR CABLE. (Gr. 18-20.)**

18. Cable grippers for suspended cableways.
19. Cable grippers for cable street railways.
20. Cable grippers for mine railways.

**20b. Locomotives and Motor Cars (except boilers, class 13; furnaces, class 24; steam engines, class 14; condensers, class 14g, 17d; signals, class 74d; and electric motive power, under 1); Also Sanding Devices for Street-Railway Cars.****STEAM LOCOMOTIVES. (Gr. 1-4.)**

1. Steam railway locomotives; general arrangement.
2. Steam street-railway locomotives; general arrangement.
3. Steam rack-rail locomotives.
4. Fireless locomotives.
5. Gas locomotives.
6. Compressed-air locomotives and feeding devices; hot-air locomotives.
7. Electric locomotives with portable power generators. (Cf. 201, 7.)
8. Locomotives with peculiar motor mechanism not included in gr. 1-7.
9. Towing locomotives.

**DRIVING MECHANISM FOR LOCOMOTIVES. (Gr. 10-12.) (Cf. 20d, 5.)**

10. Driving mechanism for locomotives with piston motors. (Cf. gr. 12.)
11. Driving mechanism for locomotives with turbines and other rotary motors.
12. Miscellaneous driving mechanism for locomotives not included in gr. 10-11. (Cf. gr. 10.)

13. Tenders and apparatus for taking water.
14. Elements of locomotives (disposal of smoke, governors, smoke chambers, ash pans, exhaust pipes, seats, platforms, boiler mounting, cabs, etc.). (Cf. 24a-c, e-1; 65a, 18, 21, and 26.)
15. Traction increasers for locomotives. Producing adhesion by use of magnets.

**SANDING DEVICES. (Gr. 16-17.)**

16. Sanding devices operable by air, steam, electricity, etc.



## 20b—Continued.

17. Sanding devices operable by hand.

18. Miscellaneous mechanism in locomotives and motor cars.

20c. **Cars, Handcars, and Railway Velocipedes** (Railway car equipment, so far as it involves arrangements to prevent injury in case of collision, otherwise in 34g, and excluding pipe couplings for heating or for brakes, etc., class 47b), also **Buffer Cars for Protection in Case of Collision.**

## PASSENGER AND FREIGHT CARS FOR RAILWAYS. (Gr. 1-12.)

1. Car bodies for passenger cars. (Cf. 63b, 1.)
2. Car bodies for freight cars of wood and iron. (Cf. 63b, 1.)
3. Iron freight cars.
4. Baggage cars.
5. Postal cars.
6. Street railway "summer and winter" cars.
7. Cars for transportation of corpses
8. Cars whose parts may be used for tent and bridge erection, also derrick cars and auxiliary cars. (Cf. 63b, 30.)
9. Tank cars. (Cf. 63b, 35.)
10. Cars for transportation of provisions, fruit, etc. (Cf. 63b, 35.)
11. Live-stock cars.
12. Bolster and stanchion flat cars. (Cf. 63b, 1.)

## UNLOADING AND DUMPING CARS FOR RAILWAY USE. (Gr. 13-16.)

13. Dump cars with sliding and pivoted closures. (Cf. 63b, 33.)
14. Freight cars convertible into automatic unloading cars.
15. Tip cars. (Cf. 63b, 32.)
16. Trough-shaped tip cars.

## SAFETY CARS FOR RAILWAYS. (Gr. 17-18.)

17. Buffer and other cars for protection of trains in case of collision, also buffers per se for this purpose; prevention of telescoping and lateral displacement of cars in collisions.
18. Cars designed for protection against assault upon trains.

## HAND CARS AND RAILWAY VELOCIPEDES. (Gr. 19-20.)

19. Hand cars.
20. Railway velocipedes for one or two rails. (Cf. 63h, 11.)

## HEATING AND COOLING, VENTILATING AND LIGHTING OF RAILWAY VEHICLES. (Gr. 21-29.)

21. Car heating by means of heated objects (warming flasks, stoves, etc.).
22. Train heating. (Water, steam, and air heating systems.) (Cf. 36c.)
23. Electric heating with special sources of current. (Cf. 201, 3.)
24. Cooling apparatus.
25. Ventilating apparatus.
26. Dust and wind shields.
27. Car lighting by means of gas.
28. Car lighting by means of electricity. (Cf. 201.)
29. Wind shields for drivers of locomotives and street cars. (Cf. 63b, 3; 63c, 24.)

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## 20c—Continued.

## STRUCTURE OF THE ELEMENTS OF RAILWAY CARS. (Gr. 30-39.)

30. Car roofs and covers, canvas roofs and awnings for railway cars. (Cf. 63b, 3.)
31. Platform bridges and gangways for passenger cars.
32. Side gratings for open street cars and platform gates.
33. Doors for passenger cars, and safety devices to prevent being caught by the door. (Cf. 63b, 6.)
34. Doors for freight cars.
35. Conjointly operated door fasteners.
36. Emergency doors.
37. Stairs and steps. (Cf. 63b, 8.)
38. Auxiliary and temporary platforms [skids or loading platforms, etc.].
39. Windows and curtains, together with devices for keeping the windows clear. (Cf. 63b, 7.)

## RAILWAY FURNISHINGS. (Gr. 40-47.)

40. Sleeping conveniences. (Cf. 33d, 5-6.)
41. Seats. (Cf. 33d, 5-6; 34g, 7; 63b, 2; 63c, 22.)
42. Toilet conveniences and the like. (Arrangements for washing, cuspidors, closets.) (Cf. 34f, 10; 34k, 1 and 6.)
43. Folding tables, writing desks, etc.
44. Baggage racks and umbrella holders.
45. Arm and head rests for passengers. (Cf. 33d, 6.)
46. Hand grips and supports for standing passengers.
47. Bicycle supports.

## APPURTENANCES OF RAILWAY CARS. (Gr. 48-52.)

48. Poster and ticket holders.
49. Indicating devices. [Indicate occupancy of seats, etc.]
50. Pay windows.
51. Observation mirrors.
52. Devices for utilization of the movements of railway cars while traveling.

20d. **Underframes, Axles, Devices for Adjustment of Axles, Journal Boxes, Wheels, Springs, Safety Devices.**

## UNDERFRAMES AND TRUCKS. (Gr. 1-5.)

1. Rigid underframes.
2. Collective arrangement of trucks.
3. Elements of trucks.
4. Trucks for jointed railway cars. [Single truck supporting adjacent ends of two cars.]
5. Mounting of the motor in the underframe (truck). (Mounting of electric motors, 201, 21.)

## RAILWAY CAR FLEXIBLE AXLES, ADJUSTABLE LOCOMOTIVE AXLES, ETC. (Gr. 6-7.)

6. Railway car sliding axles.
7. Adjustable coupled axles of locomotives.

## AXLES FOR RAILWAY VEHICLES, ETC. (Gr. 8-11.)

8. Axles for railway vehicles and mine cars.
9. Axles with loose or partly fixed wheels for railway cars.
10. Divided axles for railway cars.
11. Railway car wheels without axles.

## AXLE BEARINGS AND JOURNAL BOXES FOR RAILWAY VEHICLES. (Gr. 12-17.)

12. Locomotive journal boxes.
13. Journal boxes for railway cars. (Cf. gr. 18.)

## 20d—Continued.

14. Journal boxes for sliding axles.
15. Roller and ball bearings for railway car wheels. (Cf. 47b, 12; 63d, 14 and 15.)
16. Journal box shells of wrought iron or steel.
17. Dust guards for journal boxes.

## JOURNAL BOX LUBRICATION FOR RAILWAY VEHICLES. (Gr. 18-20.)

18. Journal box lubrication in general.
19. Journal box lubrication with arrangements for introducing the lubricant from outside.
20. Wheels with automatic lubrication.

## SPRINGS ON RAILWAY VEHICLES. (Gr. 21-22.)

21. Arrangement and elements of the car springs. (Cf. 63b, 14.)
22. Buffer springs, including rubber buffers and the like.

## WHEELS, ETC., FOR RAILWAY VEHICLES. (Gr. 23-28.)

23. Structure of wheels in general.
24. Tire fastenings.
25. Elastic wheels.
26. Balls as a substitute for wheels.
27. Sliding shoes in place of wheels.
28. Derailment guards and guide wheels.

## SPECIAL CONSTRUCTION OF THE UNDERFRAMES OF RAILWAY VEHICLES. (Gr. 29-31.)

29. Railway vehicles capable of travel either longitudinally or transversely.
30. Vehicles with wheels for traveling both on railways and ordinary roads. (Cf. 63b, 29.)
31. Railway vehicles with variable gauge.

## PROTECTIVE DEVICES FOR STREET AND OTHER RAILWAY ROLLING STOCK. (Gr. 32-35.)

32. Protective devices on railway vehicles.
33. Fenders.
34. Protective devices between two cars coupled together.
35. Safety devices behind street cars to give warning against stepping over the track.

## 20e. Couplings, Draft and Buffer Mechanism. (For railways.)

## CAR COUPLINGS AND APPURTENANCES. (Gr. 1-22.)

1. Screw car couplings.
2. Car couplings with coupling members rotatable in a vertical plane.
3. Car couplings with horizontally rotatable coupling members.
4. Car couplings with members rotatable about the axis of the train.
5. Car couplings with vertical pins.
6. Car couplings with horizontal pins.
7. Car couplings with arrow-shaped members.
8. Car couplings with pendulum members.
9. Car couplings with tong-shaped members.
10. Jaw couplings. [M. C. B. standard.]
11. Rigid articulated couplings.
12. Couplings between locomotive and tender.
13. Car couplings automatically set by impact.
14. Transition car couplings. [For two couplings of different types.]
15. Combination car couplings (car, train pipe, electric conductor, etc.) (Cf. 21c, 21.)

## 20e—Continued.

16. Car couplings for secondary and small-sized railway vehicles.
17. Unusual forms of couplings.
18. Securing devices for car couplings.
19. Uncoupling devices, including those which are automatic and those operable from one place on the train.
20. Implements for coupling railway vehicles: Auxiliary couplings.
21. Details of car couplings.
22. Related devices. (Devices for showing the positions of the coupling members, lubricating devices, etc.)

## DRAFT AND BUFFER MECHANISM. (Gr. 23-25.)

23. Railway draft and buffer mechanism (for absorbing the energy of push and pull).
24. Draft mechanism only.
25. Buffer mechanism only.

## 20f. Brakes so Far as Applied to Railway Rolling Stock, Including Electrically Controlled Air Brakes.

## ELEMENTS OF RAILWAY BRAKE MECHANISM OF ALL KINDS. (Gr. 1-6.)

1. Brake shoes. (Cf. 63b, 56.)
2. Brake rigging and parts for hand brakes, etc.
3. Brake rigging and parts for air brakes alone or in combination with hand brakes.
4. Brake setting devices for railway brakes. (Brake staffs, etc., mechanical setting apparatus exclusive of that for air brakes.) (Gr. 39.) (Cf. 63b, 54.)
5. Brake setting devices which simultaneously set in operation other mechanism (sanding devices, doors, etc.).
6. Adjusting devices for railway brakes.

## SINGLE-CAR BRAKES. (Gr. 7-16.)

7. Switch yard [shunting] and field-railway brakes. [Light brakes applied from the ground, etc.]
8. Wheelbrakes. [Miscellaneous.]
9. Brakes for adjustable axles and trucks.
10. Tong-shaped brakes [rail grippers].
11. Band brakes.
12. Wedge and sliding shoe brakes [rail brakes].
13. Fan brakes.
14. Spring-applied brakes.
15. Brakes influenced by the weight of the car.
16. Miscellaneous hand brakes.

17. Group brakes [for more than one car]. (Two-car counterweight operated, etc.)
18. Friction brakes [operated by friction gearing].
19. Buffer-operated brakes (set by operation of buffer, draft rigging, or safety devices).
20. Special mechanism for railway brakes set by means along the track. (Cf. 20i, 33-35.)
21. Railway brakes for inclined roads, and back-stop brakes.
22. Brakes for cable street railways. (Hand and automatic).
23. Railway brakes operated upon injury to the driving mechanism or the track, upon derailment, or other accident.
24. Railway brakes operated upon the occurrence of excessive speed.
25. Miscellaneous automatic railway brakes.



## 20f—Continued.

## AIR BRAKES FOR RAILWAY VEHICLES. (Gr. 26-42.)

26. Direct-operating compressed-air brakes.
27. Automatic single-cylinder compressed-air brakes.
28. Control valves, without quick braking action, for automatic single-cylinder compressed-air brakes.
29. Quick-acting brake valves for automatic single-cylinder compressed-air brakes.
30. Supplemental reservoir resupplying and filling devices for compressed-air brakes, retaining valves and the like for automatic single-cylinder compressed-air brakes.
31. Brake cylinder release valves for automatic single-cylinder compressed-air brakes.
32. Train-pipe release valves for automatic single-cylinder compressed-air brakes.
33. Double compressed-air brakes and parts thereof (direct and automatic single-cylinder compressed-air brakes, one and two cylinder compressed-air brakes, etc.).
34. Two-cylinder compressed-air brakes and parts thereof.
35. Vacuum brakes and parts thereof.
36. Compressed-air street-railway brakes with axle-driven pumps.
37. Electrically controlled air brakes.
38. Air-compression brakes. [Dash-pot brakes.]
39. Engineers' brake cocks for air brakes of all kinds.
40. Pump governors and air-pressure regulating valves for railway vehicle air brakes.
41. Train pipes and automatic pipe closing valves. (Cf. 47f, 12.)
42. Special air-brake mechanism for trains with a plurality of locomotives or motor cars.

43. Hydraulic pressure brakes, etc.
44. Electromagnetic brakes (not including those for electrically operated roads, cf. 20l, 28 and 29).
45. Miscellaneous locomotive brakes.
46. Unusual forms of mechanical railway brakes.
47. Miscellaneous brake-operation indicators for railway brakes.
48. Emergency brake apparatus for trains.
49. Brake-power regulators of all kinds for railway brakes.
50. Miscellaneous elements of air brakes and the like.

## 29g. Transfer Tables, Turntables, Water Cranes, Track Buffers, Convertible Devices, Car-Transporting Trucks, Apparatus for Boarding Trains and for Transferring Freight, etc.

1. Locomotive and car turntables, including those for suspended, cable, and rack-rail roads.
2. Turntables for connecting inclined ways.
3. Transfer tables for railway use.
4. Car-transporting trucks [for hauling cars on tracks of different gauge] and other transporting devices for railway vehicles.
5. Devices for transporting road vehicles upon rail-systems (converting devices), also chocks for same.
6. Apparatus for boarding moving trains.
7. Transfer mechanism for standing cars. [Transferring cars from one track to another.]
8. Track buffers.
9. Water cranes and water stations for railway service.

## 20h. Auxiliary Apparatus for Railway Service, Including Hot-Box Alarms, Devices on Locomotives and Cars for Indicating Imperfections in the Track (cf. class 19a), Tire-Measuring Instruments, Car Starters, Power-Storing Brakes, Track Brakes, Chocks, Derailing and Rerailing Apparatus, Car Movers, Car-Washing Apparatus, Mail-Bag Catchers, etc.

1. Miscellaneous auxiliary apparatus for railway service, including load gauges, hot-box alarms, devices on vehicles for indicating imperfect track, tire-measuring instruments. (Switch signals, 20i, 1; registering apparatus, 42d.)
2. Starters. (Cf. 63b, 28.)
3. Power-storing brakes. (Cf. 63b, 65.)
4. Track brakes and sanded sidings. [Brakes mounted along track.]
5. Chocks for railway vehicles.
6. Means for derailing or replacing cars; lifting devices for axles, wheels, etc., for railway use.
7. Car movers. (Capstans, general arrangement.)
8. Devices for washing railway cars. (Cf. 63b, 44.)
9. Rail cleaners for ordinary railways (cf. 19b, 2) and snowplows for locomotives (cf. 19b, 6).
10. Rail moisteners and wheel-flange sprinklers.
11. Catchers for mail bags, parcels, or train orders in connection with moving trains.

## 20i. Switches (except current conducting switches under k), Railway Gates, Signals, Including Station Indicators, and Train Control of all Kinds.

## SWITCH-THROWING MECHANISM AND RAILWAY SIGNALS. (Gr. 1-14.) (Signals, cf. 74.)

1. Switch-throwing mechanism and signals in general, especially central-station switch systems.
2. Switch and signal levers.
3. Constructive arrangement of railway signals and their operating mechanism.
4. Constructive arrangement of the switches, frogs, and crossings.
5. Switch movements, point locks, and lock bolts.
6. Switch fastening by locks or locking disks.
7. Broken-wire locking devices for switches. [Actuated upon breakage of the operating connection.]
8. Switch tongues and their fastenings.
9. Switches, frogs, and crossings for suspended, cable, and rack-rail roads.
10. Switch and signal systems operated by fluid pressure.
11. Switch and signal systems operated by electricity.
12. Compensators and conductor guides for switches, etc.
13. Switch and signal control or supervision.
14. Lanterns and appurtenances for switches, gates, and signals.

## SWITCHES OPERABLE FROM THE VEHICLE (excepting current-conducting switches, cf. k). (Gr. 15-17.)

15. By mechanical devices.
16. By fluid-pressure devices.
17. By electrical devices.

## RAILWAY GATES. (Gr. 18-23.)

18. Railway gates in general.
19. Control of gates by the train.

## 20i—Continued.

20. Operating mechanism and signals for gates.
21. Devices for supervising proper service in connection with railway gates.
22. Railway gates with opening movements in two directions [vertical and horizontal].
23. Special forms of railway gates.

## SIGNALS ON RAILWAY TRAINS, INCLUDING STATION INDICATORS. (Gr. 24-27.)

24. Signals on railway vehicles, including emergency signals and headlights. [For lamp structure cf. 4a, 48.]
25. Station indicators, especially those mechanically operated (also signboards for way stations). (Cf. 54g, 4-7.)
26. Fluid pressure operated station indicators. (Cf. 54g, 4-7.)
27. Electrically-operated station indicators. (Cf. 54g, 4-7.)

## BLOCK SYSTEMS. (Gr. 28-29.)

28. Block systems of the Siemens and Halske type.
29. Block systems not included in gr. 28.

## TRAIN PROTECTION OR CONTROL WITH THE COOPERATION OF THE TRAIN. (Gr. 30-45.)

30. Train protection with the cooperation of the train, in general.
31. Track-section circuit closers.
32. Treadles, detector, and locking bars.
33. Signal or brake operation upon the moving train from the track by mechanical devices. (Cf. 20f, 20.)
34. Same, by mechanical-electrical devices. (Cf. 20f, 20.)
35. Same, by electrical devices. (Cf. 20f, 20.)
36. Train control for electric roads by current interruption.
37. Track section signals set by the train through mechanical or mechanical-electrical means.
38. Track section signals set by the train through electrical means.
39. Warning, tunnel, and crossing signals.
40. Securing (blocking, locking) of signals and traffic ways, also signals which automatically fall into position.
41. Control of trains in the station.
42. Protection of single-track sections with sidetracks (also train-staff control).
43. Detonating signals for railways. Fastening torpedoes upon the rails, and composition of the torpedoes.
44. Detonating signals which depend upon the operation of other signals, also substitutes for torpedoes.
45. Miscellaneous devices for train control not included in gr. 30-44.

## 20k. Electric Railways (Cf. 19a, for railway structure in general), Devices on the Rails and Rail Joints for Conducting or Insulating the Current, Overhead and Underground Conductors, Sectional Conductor Arrangements, Protection against Earth Currents, Scaffold Vehicles.

## ELECTRIC RAILWAY SYSTEMS. (Gr. 1-6.)

1. Electric elevated, underground, suspended, single-railed, and rack-rail roads. (Cf. 20a; 20i, 30.)
2. Electric towing systems. (Cf. 20i, 30.)
3. Electric road systems with shifting field (induction drive).
4. Processes and apparatus for supplying current to electric road systems.

## 20k—Continued.

5. Above-ground single-contact electric railways. (Cf. gr. 15-17, sectional conductors, for single contacts which are cut in ahead of the car.)
6. Conducting arrangements for electric railways at bascule and other drawbridges.

## DEVICES ON THE RAILS AND RAIL JOINTS FOR CURRENT CONDUCTING OR INSULATING IN ELECTRIC RAILWAYS. (Gr. 7-8.)

7. Conducting rail bonds, including welded connections, for electric railways. (Cf. gr. 14.)
8. Rail insulation for electric railways.

## CONDUCTORS FOR ELECTRIC RAILWAYS, BOTH ABOVE AND UNDER GROUND. (Gr. 9-14.)

9. Aerial conductors and their suspension in connection with electric railways (also line insulators, turnbuckles, curve pull-offs).
10. Switches and crossings for overhead conductors.
11. Devices to prevent falling of conductors, for cutting out and for grounding broken conductors. (Cf. 21c, 9, 60.)
12. Guards for preventing accidents from broken conductors for weak currents falling upon electric railway conductors.
13. Supplying current to electric railways by slotted conduits. (Cf. gr. 14-17; 20i, 18.)
14. Supplying current to electric railways by third rails. (Cf. gr. 5, 15-17; 20i, 19.)

## SECTIONAL CONDUCTOR ARRANGEMENTS FOR ELECTRIC RAILWAYS. (Gr. 15-17.)

15. Mechanically controlled sectional conductors (contact studs and contact rails on the surface of the street, over or under ground). (Cf. 20i, 20.)
16. Sectional conductors connected by means of magnets on the car. (Cf. 20i, 20.)
17. Sectional conductors connected by means of magnets along the track. (Cf. 20i, 20.)

18. Arrangements for protection against earth currents, voltage drop in the return conductor, and induction disturbances in connection with electric railways.
19. Scaffold wagons, and special tools for electric railways.
20. Special mechanism in connection with railway track for electric operation.

## 20l. Electric Railway Rolling Stock, Electric or Partially Electric Traction Methods, Current Collectors, Motors, Including Motor Control for Separate Cars or Entire Trains, Electric or Partially Electric Brakes. (Electrically controlled air brakes and the like, 20f).

## ROLLING STOCK FOR ELECTRIC RAILWAYS. (Gr. 1-3.)

1. Traction increasers. (Rail brakes, gr. 28.)
2. Devices for utilization of brake resistance or generating a second current. (Cf. gr. 28-29.)
3. Electric heating and lighting of electrically driven railway vehicles. (Cf. 20c, 23; 21c, 45; 21h, 1-5.)

## PROPULSION OF TRAINS OR CARS ELECTRICALLY OR BY ELECTRIC AND OTHER POWER COMBINED. (Gr. 4-7.)

4. Propulsion by direct-current motors (with exterior source of current, also with transformers on the vehicle, and direct and alternating motors combined). (Cf. gr. 23.)



## 201—Continued.

5. Propulsion by means of alternating-current motors. (Alternating and direct motors combined, gr. 4.)
6. Propulsion by means of storage batteries.
7. Combined electric and other propulsion, also self-propelled electric railway cars which carry a mechanical power plant. (Cf. 20b, 7; 63c, 1.)

## CURRENT COLLECTORS FOR ELECTRIC RAILWAYS. (Gr. 8-20.)

8. Trolley and sliding shoe current collectors for overhead conductors. (Cf. gr. 10, 11, and 17.)
9. Bow, cylinder, and whip current collectors.
10. Poles and stands of special construction for current collectors (e. g., jointed and spring connection of the parts, also pantograph stands).
11. Under frames and arrangements for mounting current collectors. (Cf. gr. 10.)
12. Devices for preventing displacement and for automatically replacing displaced current collectors.
13. Devices for facilitating the placing of the current collector upon the conductor [finders]. (Cf. gr. 12.)
14. Devices for automatically withdrawing or holding displaced conductors. [Retrievers.]
15. Current collectors with independent operating mechanism.
16. Current collectors arranged to pass each other where one conductor is used for two tracks.
17. Current collectors for bi-polar or multi-polar conductors of electric railways (also for trackless trolley).
18. Current collectors for slotted conduits. (Cf. 20k, 13.)
19. Current collectors for third-rail systems. (Cf. 20k, 14.)
20. Current collectors for sectional conductor systems. (Cf. 20k, 15-17.)

## MOTORS AND MOTOR CONTROL FOR SEPARATE CARS OR ENTIRE TRAINS. (Gr. 21-27.)

21. Mounting, suspension and coupling, gearing, and other special arrangements for electric railway motors.
22. Controllers, and special devices in connection with controllers for electric railways. (Cf. 21c, 52.)
23. Connections and regulating devices for separate cars, especially for direct-current operation (for combined direct and alternating current, gr. 4; for alternating current, gr. 5; for storage battery operation gr. 6; for self-contained cars, gr. 7.)
24. Purely electrical control of electric railway trains.
25. Compressed air, and electric-compressed air control of electric railway trains.
26. Connections for train conductors of electric railway trains. (Cf. 21c, 20-26.)
27. Safety devices and other special mechanism for electric railway rolling stock.

## BRAKES ELECTRICALLY OPERATED, OR IN PART ELECTRICALLY OPERATED, FOR ELECTRIC RAILWAYS. (Gr. 28-29.)

28. Purely electric brakes.
29. Brakes operated by combined electric and other means. (Electrically controlled air brakes and the like for railway use so far as the electric mechanism in their construction is concerned.) (Cf. 20f, 44.)
30. Rolling stock and related mechanism for electric elevated, subway, suspended, single railed, rack rail, towing, and other special railway systems. (Cf. 20k, 1, 2, 20.)

## CLASS 21.—ELECTROTECHNICS.

## 21a. Telegraphy and Telephony.

TELEGRAPHY (including, in part, features applicable also in telephony, cf. gr. 10, 23, 25-28). (Gr. 1-28.)

1. Morse telegraphs and similar writing telegraphs exclusive of the Gray system (apparatus and connections). (Cf. gr. 2.)
2. Gray telegraphs.
3. Morse keys and other telegraph transmitters (automatic Morse transmitters).
4. Switch systems for indicator telegraphs and similar telegraphs situated in the same circuit.
5. Copying telegraphs exclusive of the Gray. (Cf. gr. 2.)
6. Automatic and cable telegraphy.
7. Apparatus for the making of perforated sending strips.
8. Photographic telegraphy.
9. Multiplex telegraphy with resonance.
10. Multiplex telegraphy, especially intermittent for type printing, also multiplex telephony.
11. Type-printing telegraphs printing upon paper strips.
12. Printing telegraphs employing perforated strips.
13. Synchronism, especially for printing telegraphs.
14. Regulating, braking, and winding devices for printing telegraphs.
15. Translating Morse characters into type printing.
16. Telegraphic operation of typewriters. (Cf. 15g, 23.)
17. Printing telegraphs with line printing by means of a type wheel.
18. Type-printing telegraphy, etc., according to the Rowland process.
19. Type-printing telegraphy, etc., without a line wire.
20. Relays for telegraphy. (Construction and connections.)
21. Electro-magnetic devices for telegraph relays, sounders, etc.
22. Telegraph sounders and alarms.
23. Use of power circuits for telegraphy and telephony.
24. Duplex and quadruplex telegraphy.
25. Telegraphy and telephony upon the same line wire. Simultaneous use of direct and alternating currents.
26. Production of signals in telegraph and telephone circuits by means of coherers.
27. Protection against induction disturbances and high tension in telegraph and telephone lines. (Cf. 21c, 4.)
28. Induction coils for telegraphy and telephony.

TELEPHONY. (Gr. 29-45.) (Cf. Telegraphy Gr. 10, 23, 25-28.)

29. Signal devices for telephones, especially magnetos.
30. Phonographic telephones and automatic-reply telephones.
31. Telephones in general. (Cf. gr. 32-35.)
32. Dynamo-electric and condenser telephones.
33. Microphones, exclusive of granular. (Cf. gr. 34.)
34. Granular microphones.
35. Micro telephones.
36. Head gear for telephones.
37. Telephonic transmission of theatrical productions, etc.
38. Telephones with protective devices to prevent communication of disease. (Cf. 30i, 2.)
39. Auxiliary apparatus for telephone stations. (Telephone supports, booths, switchboards, receiver tubes, desks, registers, etc.)

**21a—Continued.**

40. Telephone connections of various kinds.
41. Attachments and constructions for telephone switchboards. (Plugs, jacks, etc.).
42. Drops and signals for telephone stations, also buzzer apparatus.
43. Registering calls by means of telegraphs, counting apparatus, etc.
44. Telephone line-selecting constructions and connections.
45. Telephone relays. (Construction and connections.)

46. Coin-controlled telephone stations. (Automatic prepayment stations.) (Cf. 43b.)

**TELEPHONE METERS. (Gr. 47-49.)**

47. Meters located at the central office.
48. Meters located at the subscriber's station which are actuated from the office.
49. Meters located at the subscriber's station which are actuated by the subscriber.

50. Processes for transmission of pictures by means of selenium or similar substances whose resistance varies with the illumination. (Telephoty.)

**CONNECTIONS FOR MANUALLY CONTROLLED TELEPHONE EXCHANGES. (Gr. 51-58.)**

51. Telephone multiple connections with local calling and local microphone batteries.
52. Same with local calling and central microphone batteries.
53. Same with central calling and local microphone batteries.
54. Same with central calling and microphone batteries.
55. Same with group calls.
56. Same with cordless plugs, including rotary or lever switches.
57. Same with single cord operation.
58. Connections for telephone exchange connecting lines. [Trunk lines.]

**PARTY TELEPHONE LINES, ETC. (Gr. 59-63.)**

59. Party telephone lines with automatic switch arrangements for connected stations.
60. Party telephone lines with special step-by-step switch arrangements for each of the connected stations.
61. Party telephone lines with relays provided at each station responding to currents of different kind (D. C., A. C.), or to differences in direction, duration, or strength.
62. Party telephone lines with special connecting devices at each station by which, after switching in any desired station, other stations are unable to connect with the exchange. [Lockouts.]
63. Party telephone lines with manually controlled common switch apparatus for the connected stations.

**AUTOMATIC TELEPHONE SWITCHES. (Gr. 64-65.)**

64. Automatic telephone switches with rotary contact arms.
65. Automatic telephone switches with contact elements adjustable in a plurality of directions.

**21a—Continued.****WIRELESS TELEGRAPHY AND TELEPHONY. (Gr. 66-71.)**

66. Production of electric oscillations.
67. Sending systems for wireless telegraphy (also telephony).
68. Receiving systems for wireless telegraphy (also telephony).
69. Telegraphing processes for wireless telegraphy (also telephony).
70. Wave detectors for wireless telegraphy (also telephony), e. g., coherers.
71. Auxiliary mechanism for wireless telegraphy (also telephony) not included in gr. 66-70, e. g., arrangements of aeriels, testing, and tuning apparatus, induction coils and condensers for high-frequency apparatus (cf. 21g, 10), high-frequency transformers, masts for wireless telegraphy so far as their structure is affected by use in connection with high-frequency apparatus (cf. 21c, 12; 37b, 3; 37i, 4, 7), measurement of wave lengths, and damping of the oscillations in circuits.

- 21b. Galvanic Cells, Storage Batteries, and Thermo-elements. (Making metallic battery plates by casting, 31c; by mechanical metal working, 49i; charging and discharging storage batteries, 21c.)

**GALVANIC CELLS AND STORAGE BATTERIES IN GENERAL. (Gr. 1-5.)**

1. Receptacles, closures, and arrangements for removing gas. (Cf. 12f, 3.)
2. Diaphragms and insulating devices. (Cf. 12h, 3.)
3. Electrode fastenings, current connections, terminals, etc. (Cf. 21c, 20-22.)
4. Circulation features, filling and emptying devices. (Cleaning, gr. 26.)
5. Nonfluid electrolytes; also means for absorbing or condensing electrolytes.

**GALVANIC CELLS IN PARTICULAR. (Primary batteries.) (Gr. 6-14.)**

6. Exciters, depolarizing fluids and solid depolarizing materials.
7. Electrodes for primary batteries. (Cf. 12h, 2; 40c, 3, 4.)
8. Construction of primary batteries with one fluid electrolyte. (Cf. gr. 10-11.)
9. Construction of primary batteries with two fluid electrolytes. (Cf. gr. 10-11.)
10. Construction of voltaic piles and dry cells.
11. Bichromate batteries.
12. Associating primary cells in batteries; also battery stands. (Cf. gr. 10, 11, 26.)
13. Special processes and apparatus for depolarizing or other treatment of primary cells. (Heating and moving the electrodes or the electrolytes, brushes, etc., also working up the waste materials for use in cells.)
14. Combustion cells, gas batteries.

**STORAGE BATTERIES IN GENERAL. (Gr. 15-26.) (Gr. 15-23 relate especially to lead batteries.)**

15. Processes and apparatus for mechanically constructing storage battery electrodes, including pasting.
16. Processes and apparatus for chemical manufacture of storage battery electrodes. (Deposition.)
17. Paste mixtures and support materials.
18. Grids and frame plates.
19. Core plates.



## 21b—Continued.

20. Paste supports of wire, strips, fabrics, etc.
21. Boxes, capsules, etc., as paste supports or envelopes for electrodes of storage batteries.
22. Miscellaneous supporting forms for storage batteries (principally of massive forms other than plane).
23. Construction of storage batteries from the mechanical and chemical point of view.
24. Storage batteries in which one of the active materials contains no lead. (Half-lead batteries.)
25. Storage batteries in which neither of the active materials contains lead.
26. Special processes for the operation of storage batteries, cleaning processes and apparatus, also packing for cells, battery stands, etc.

## 27. Thermo-cells and batteries.

## 21c. Electric Conduction and Wiring Systems, Including Resistance Materials, Insulating Materials, Switches, Regulators, Switching Methods, and Safety Devices, e. g., Lightning Arresters.

## ELECTRIC CONDUCTORS. (Gr. 1-11.)

1. Conducting and resistance materials.
2. Insulating materials. (Cf. gr. 7 and 14; 39b, 9.)
3. Mechanical structure of electric conductors and cables, protective coverings, plug cords for telephone switchboards. (Cf. 21a, 41.)
4. Electric conductors and cables with special arrangements for reducing disturbances from induction in opposed conductors. (Cf. 21a, 27.)
5. Electric conductors and cables with special arrangements for affecting self-induction and capacity; also air insulation. (Cf. 21a, 27.)
6. Prevention of humming in stretched conductors and poles.
7. Insulating and removal of insulation from electric conductors. Cable drying and impregnating apparatus.
8. Laying aerial and underground electric conductors, cleaning snow and ice from wires.
9. Prevention of disturbances and accidents upon injury to cables, breakage of wires, or short circuiting. (Cf. 20k, 1f; 21c, 60.)
10. Insulating bushings, tubular standard heads, insulating, and waterproof conduits.
11. Lightning arresters and ground plates. (Cf. gr. 26, 61; 37d, 35.)
12. Masts and poles for electric conductors with features relating to insulation. (Cf. gr. 6; 21a, 71; 37b, 3; 37f, 4.)
13. Suspension devices for electric conductors, supporting and strain insulators, devices for relieving the pull upon the conductor in suspended apparatus. (Lamp suspension, 21f, 57-59, trolley-wire suspension, 20k, 9.)
14. Bracket insulators for electric conductors. (Cf. 20k, 8; 80a, 47.)
15. Insulator supports for electric conductors and means for fastening the insulators upon the supports.
16. Wire fastening on insulators and knobs for electric conductors.
17. Mounting electric conductors directly upon walls, insulator knobs, and fastenings for same. (Wall dowels, 34e, 18.)

## 21c—Continued.

## TUBES AND CONDUITS FOR ELECTRIC CONDUCTORS. (Gr. 18-19.)

18. Tubes and moldings for housing electric wires and means for fastening same. Manufacture of insulating tubes.
19. Conduits for cables; cable coverings; cable pits.

## CONNECTORS FOR ELECTRIC CONDUCTORS. (Gr. 20-26.)

20. Permanent connectors and intermediate conducting layers for electric conductors. Jointed connectors.
21. Readily releasable connectors, including those for electric cars; cable sockets and their connection to the conductor; terminals. (Switchboard terminals, gr. 27.)
22. Plug contacts (cf. gr. 59 for inserted point, two-pin plug and screw contacts); suspended contacts.
23. Distribution boxes and end sleeves; arrangement of feeding and distributing points for free and underground conductors.
24. Pipe connections and junctions for electric conductor tubes.
25. Junction boxes, branch blocks, distribution plates, ceiling rosettes, for electric wires, etc.
26. Connections for lightning arresters.

27. Electric switchboards and switchboard terminals; supporting plates and housings for the fastening of electric apparatus and conducting parts in general.

## ELECTRIC SWITCHES. (Gr. 28-39.)

28. Lever switches and knife switches.
29. Rotary switches.
30. Push-button switches.
31. Pull switches.
32. Slide switches. (Plug switches, cf. gr. 21.)
33. Mercury switches.
34. Switches protected from entrance of moisture.
35. Switches constructed to prevent sparking (electromagnetically, electro-dynamically, by means of a current of air, by means of oil, inert gases, a vacuum, etc., by counter-cells, or by cut-outs on adjoining contacts).
36. Door switches.
37. Switches for theater stages.
38. Switches for a plurality of circuits (combination switches).
39. Special forms of electric switches and switch parts.
40. Time-controlled switches, e. g., for lighting stairways, for advertising, etc. (Cf. 4d, 17; 74a, 13-20; 74d, 8, 11.)
41. Switches operable from a distance, especially electromagnetically actuated switches.
42. Manual battery switches for storage batteries.
43. Automatic battery switches for storage batteries.
44. Charging switches for storage batteries, and arrangements of connections.
45. Electric lighting of trains combined with production of the current. (Electric lighting of trains with current supplied from exterior sources, 20l, 3.)

## 21c—Continued.

## ELECTRIC RESISTANCES AND RHEOSTATS. (Gr. 46-48.)

46. Resistances and rheostats of metal (wire and ribbon resistances).
47. Resistances and rheostats of carbon, graphite, pulverulent materials, etc.
48. Liquid resistances.

## DEVICES FOR STARTING AND CONTROLLING ELECTRIC MOTORS. [Controllers.] (Gr. 49-53.)

49. Manually operated starters (starting and reversing switches) and controllers for electric motors.
50. Automatic starting devices (relay starters) and controllers for electric motors.
51. Liquid starters for electric motors. (Cf. Liquid resistances, gr. 48.)
52. Motor control devices of general application which have the form of cylinders or drums.
53. Devices for starting and controlling electric motors particularly for special purposes, as for driving pumps, organ bellows, dental apparatus, printing presses, machines tools, rudders, bulkhead doors, etc. (Cf. 35a, 25.)

## DEVICES FOR REGULATING DYNAMOS AND TRANSFORMERS. (Gr. 54-56.)

54. Automatic potential and current regulators for dynamos and transformers. (Cf. gr. 45.)
55. Devices for parallel connection of dynamos
56. Miscellaneous electric regulating devices, e. g., switches for preventing the operation of transformers when not under load.

## SAFETY DEVICES FOR PROTECTING ELECTRIC CONDUCTORS AND SYSTEMS. (Gr. 57-61.)

57. Automatic electromagnetic circuit breakers.
58. Automatic circuit breakers depending upon the action of heat.
59. Fusible safety devices, including those for switches and plug contacts, cf. gr. 22, and accessories (e. g., gauges, insulating pliers).
60. Automatic electromagnetic safety devices operating upon breakage of wires or failure of current. (Cf. 20k, 11; 21c, 9.)
61. Lightning and high voltage protectors. (Cf. gr. 11.)

## 21d. Electric Generators, Motors, and Systems of Distribution, Including Static; Transformation of Currents.

## DIRECT-CURRENT GENERATORS. (Gr. 1-5.)

1. Direct-current generators with commutators.
2. Direct-current generators without commutators. (Unipolar machines, etc.)
3. Connection of direct-current armature windings. (Cf. gr. 18.)
4. Magnetos and similar small machines. (Igniters, etc.) (Cf. 46c, 14.)
5. Static and influence machines.

## DIRECT-CURRENT MOTORS. (Gr. 6-7.)

6. Direct-current motors with rotary armatures.
7. Direct-current motors with reciprocating armatures.

8. Motor generators (converting D. C. to D. C.).
9. (No patents.)
10. (No patents.)

## 21d—Continued.

## REGULATION OF DIRECT-CURRENT DYNAMOS. (Gr. 11-15.)

11. Regulation of direct-current dynamos by changing the magnetic circuit.
12. Same, by changing the field excitation.
13. Same, by changing the armature circuit.
14. Same, by magnetic or electrically operated clutches, brakes, etc. (Cf. 47c, 15; 47h, 22.)
15. Same, by mechanical means.

## PRACTICAL DESIGN OF DYNAMOS. (Gr. 16-19.)

16. Field magnets for dynamos.
17. Armature cores for dynamos.
18. Arrangement of armature windings for dynamos. (Cf. gr. 3.)
19. Cooling of dynamos.

## DEVICES FOR TAKING OFF THE CURRENT. (Gr. 20-22.)

20. Commutators and collector rings.
21. Brushes.
22. Brush holders

## DIRECT-CURRENT DISTRIBUTION. (Gr. 23-26.)

23. Two-wire systems.
24. Multiple-wire systems.
25. Connecting electric accumulators to mains or to the source of current
26. Equalization of load by means of power-storing dynamos (flywheel dynamos). (Cf. gr. 47)

## ALTERNATING-CURRENT GENERATORS. (Gr. 27-33.)

27. Alternating-current generators with direct-current excitation.
28. Alternating-current generators with fixed windings.
29. Alternating-current generators with alternating-current excitation.
30. Special machines for alternating-current production, etc.
31. Current and voltage regulation (compounding) of alternating-current dynamos.
32. Phase regulation (compensating) for alternating-current dynamos. (Cf. gr. 31.)
33. Frequency regulation (synchronizing) for alternating-current dynamos. (Cf. 21c, 55.)

## CONVERTERS. (Gr. 34-36.)

34. Current converting. (A. C. to D. C. converters.)
35. Phase transforming.
36. Frequency transforming. (Cf. gr. 43; rectifiers, see gr. 8, 34; 21g, 11-13.)

## ALTERNATING-CURRENT MOTORS. (Gr. 37-45.)

37. Alternating-current motors with direct-current excitation.
38. Induction motors for single-phase currents.
39. Induction motors for polyphase currents.
40. Short-circuit armatures.
41. Details of alternating-current motors (structural details, short-circuit devices, etc.).
42. Starting and braking of induction motors.
43. Regulation of speed in induction motors. (Pole changing, cascade connecting, etc.)
44. Series and shunt commutator motors for alternating current, and regulation of same.
45. Alternating current repulsion motors and their regulation.



## 21d—Continued.

## ALTERNATING CURRENT DISTRIBUTION. (Gr. 46-47.)

46. Regulation of alternating current distributing mains (in general).
47. Alternating current distributing mains with converters. (Flywheel machines, cf. gr. 26.)

## TRANSFORMERS. (Gr. 48-49.)

48. Transformer structure.
49. Transformer connections and operation. (Boosters and regulating transformers, choking coils.) (Cf. regulating transformers and choking coils for incandescent lamps, 21f, 63; for arc lamps, 21f, 11.)

## 21e. Electric Measuring.

## ELECTRIC MEASURING INSTRUMENTS. (Gr. 1-13.)

1. Galvanometers.
2. Electrodynamometers.
3. Electro-magnetic measuring instruments. (Soft iron instruments.)
4. Electric hot wire and hot space measuring instruments.
5. Electrometers. (Electrostatic measuring instruments.)
6. Induction measuring instruments.
7. Phase and frequency meters, synchronism indicators and the like.
8. Maximum current indicators.
9. Insulation, leakage and resistance testing instruments, also connections for measuring fall in voltage in distribution systems.
10. Charge indicators for storage batteries.
11. Recording electric measuring instruments.
12. Devices for measuring magnetic fields and testing the magnetic properties of paramagnetic bodies.
13. Current direction and polarity indicators.

## ELECTRICITY METERS. (Gr. 14-22.)

14. Motor meters with commutators and armature rotating continuously in the same direction.
15. Rotary field meters (Ferraris principle) and induction meters.
16. Three-phase and poly-phase current meters.
17. Electric tariff meters.
18. Chemical (electrolytic) and calorimetric electric meters.
19. Electric time meters.
20. Electric clock and pendulum meters.
21. Electric oscillatory meters.
22. Electric integrating meters and all other electric meters not included in gr. 14-21.

23. Brakes and damping devices for electric measuring instruments, including meters.
24. Bearings, and pressure relieving devices for bearings, for electric measuring instruments, including meters. (Cf. 21g, 5; 47b, 8.)
25. Details of electric instruments, including meters. (Pointers, casings, counting mechanism, scales, etc.) Measuring transformers.
26. Resistances for the electric measurement art (rheostats) and their connections (e. g., compensation apparatus).
27. Methods of electric measurement.

## 21f. Electric Lighting, Including Arc Lamps, Searchlights, Hoisting Devices for Lamps (Cf. 35c), Incandescent Lamps and Sockets, Geissler Tubes, Cathode Lamps.

## ARC LAMPS WITH OPEN ARCS. (Gr. 1-4.)

1. Arc lamps with superposed electrodes.
2. Arc lamps with electrodes arranged parallel or obliquely to each other, or with electrodes of special forms.
3. Arc lamps with several pairs of electrodes.
4. Arc lamps with electrode magazines.

## ARC LAMPS WITH INCLOSED ARCS. (Gr. 5-7.)

5. Means for stopping up the globes
6. Valves for removing the gases and vapors.
7. Arc lamps filled with special gases.

## ARC LAMPS OF SPECIAL CONSTRUCTION; ALSO SEARCHLIGHTS. (Gr. 8-10.)

8. Glowing tip and candle lamps. [Jablochkoff candles, etc.]
9. Projection, copying [blue printing, etc.], and stage-lighting lamps.
10. Electric searchlights. (Cf. 4 b, 11.)

## CONNECTIONS AND SWITCH DEVICES FOR ARC LAMPS. (Gr. 11-15.)

11. Connections for single lamps, compensating resistances and choking coils.
12. Connections for a plurality of lamps.
13. Cut-out devices for arc lamps.
14. Short-circuit devices for arc lamps.
15. Starting devices or igniters for arc lamps. (Cf. gr. 2.)

## DETAILS AND APPURTENANCES FOR ARC LAMPS. (Gr. 16-21.) (Electrodes, Gr. 76-81.)

16. Electrode holders and guides. (Cf. gr. 2.)
17. Electromagnets and armatures for arc lamps; blow-out magnets.
18. Damping devices for arc lamps.
19. Devices for saving the carbons, devices for removing smoke, ash trays, protecting nets and frames. (Cf. gr. 2.)
20. Globes and globe closures. (Cf. gr. 5.)
21. Reflectors. (Cf. 4 b, 4-11.)

## HOISTING OR SUSPENSION DEVICES FOR ARC LAMPS. (Gr. 22-24.)

22. Drum hoists. (Girder, round and bracket posts; suspension upon transverse wires.)
23. Conductor connections, devices to relieve tension on the rope, and catch devices.
24. Guides for arc lamps.

## REGULATION OF ARC LAMPS. [Carbon feed.] (Gr. 25-30.)

25. Regulation by rack and pinion drive.
26. Regulation by cords or chains.
27. Regulation by clutch devices.
28. Regulation by screw spindles.
29. Regulation by hydraulic or pneumatic devices.
30. Regulation through the effects of heat.

## INCANDESCENT BODIES FOR ELECTRIC INCANDESCENT LAMPS. (Gr. 31-36.)

31. Carbon filaments and general processes of manufacture of the same (carbonizing, preparing).

## 21f—Continued.

32. Metallic filament glowers.
33. Nernst glowers.
34. Glowlers of carbon or metal in chemical or mechanical combination with other materials. (Carbides, metal compounds which are conductors when cold, coatings, mixtures, etc.)
35. Glowlers of special forms (rings, spirals, ribbons, etc.). (Cf. gr. 55.)
36. Apparatus for making glowlers. (Presses, crucibles, furnaces, etc.) (Cf. gr. 81.)

## ELECTRIC INCANDESCENT LAMPS. (Gr. 37-42.)

37. Connection of the glowlers with one another or with the feed wire. Filament supports. (Cf. gr. 31.)
38. Globe and bulb forms, also lens lamps for electric incandescent lighting. (Cf. gr. 40.)
39. Fastening the feed wire in the lamp by fusion, cementing, etc.
40. Exhausting lamp bulbs; filling with gases; sealing the bulbs. (Fusing, cementing, valves.) (Cf. gr. 38 and 42.)
41. Repairing, regenerating, and standardizing. (Cf. gr. 31.)
42. Preventing and removing deposits. (Cf. gr. 40.)

## BASES FOR ELECTRIC INCANDESCENT LAMPS. (Gr. 43-44.)

43. Bases rigidly fixed to the bulb.
44. Removable bases.

## SOCKETS FOR ELECTRIC INCANDESCENT LAMPS. (Gr. 45-51.)

45. Ordinary sockets (including those with keys provided the latter is not the principal feature). (Cf. gr. 46.)
46. Special key and switch sockets; also sockets with automatic circuit breakers, throw-over switches or safety devices. (Cf. gr. 45, 62.)
47. Sockets for a plurality of lamps and ceiling rosettes.
48. Sockets and fastenings for lamps for illumination [display] purposes, etc.
49. Insulating sockets, water and acid proof sockets and fittings, insulating coverings and inserts.
50. Fastening the conductor to the socket.
51. Prevention of loosening and of unauthorized removal of sockets.
52. Nonreplaceable sockets.

## REFLECTORS FOR ELECTRIC INCANDESCENT LAMPS. (Gr. 53-56.)

53. Reflectors permanently connected to the bulb. (Silvering, inside reflectors, etc.)
54. Removable reflectors. (Fastening to the bulb, or the base; sockets without special brackets.)
55. Brackets for reflectors.
56. Outer globes and wire guards.

## HANGERS FOR ELECTRIC INCANDESCENT LAMPS. (Gr. 57-59.)

57. Pendants and pull fittings.
58. Adjustable, rotary, and yieldable brackets and stands.
59. Cord hoists.

## PORTABLE ELECTRIC INCANDESCENT LAMPS. (Gr. 60-61.)

60. Portable lamps comprising a source of current.
61. Portable lamps with exterior source of current.

## 21f—Continued.

## REGULATION OF THE INTENSITY OF LIGHT IN ELECTRIC INCANDESCENT LAMPS. (Gr. 62-63.)

62. Multiple-filament lamps for different intensities of light. (Cf. gr. 46.)
63. Resistance switches (regulating transformers, choking coils, etc.), for incandescent lamps. (Cf. 21d, 49.)

## BROKEN FILAMENT SAFETY DEVICES AND THE LIKE FOR ELECTRIC INCANDESCENT LAMPS. (Gr. 64-66.)

64. Changing over by hand. (Spare lamps, filaments, or resistances.)
65. Changing over automatically. (Spare lamps, filaments, or resistances.)
66. Automatic circuit breakers, safety and short circuit devices.

67. Apparatus for cleaning, placing, and removing electric incandescent lamps.

## NERNST LAMPS. (Gr. 68-75.)

68. Nernst lamps with a heating body constantly in circuit.
69. Starting Nernst lamps manually.
70. Starting Nernst lamps automatically by means of an arc. (Cf. gr. 79.)
71. Starting Nernst lamps automatically by means of electric heaters. (Electromagnetic switches and moving devices; thermal, pneumatic, and other switches; diverting the current from the heater without disconnecting, bridge connections.)
72. Electric heaters for Nernst lamps.
73. Balancing resistances for Nernst lamps.
74. Special globes, sockets, etc., for Nernst lamps.
75. Special connections (combinations with carbon filament lamps) for Nernst lamps.

## ELECTRODES AND ACCESSORIES FOR ARC LAMPS. (Gr. 76-81.)

76. Ordinary solid and cored carbons.
77. Electrodes for flaming arc lamps. (Salted carbons, carbide electrodes, etc.)
78. Metallic electrodes.
79. Glowlers for arc lamps.
80. Starting plates and the like for starting the arc and additional parts for extinguishing the arc, also means for indicating the burning away of the electrodes.
81. Apparatus for making electrodes. (Presses, furnaces, etc.) (Cf. gr. 36.)

## MERCURY VAPOR LAMPS. (Gr. 82-84.) (Cf. 21g, 12.)

82. Structure of mercury vapor lamps (receptacle forms, electrode arrangements, condensing and cooling devices, etc.).
83. Electrode materials, and means for coloring the light.
84. Starting and operating connections and apparatus for mercury vapor lamps.

85. Vacuum tubes for electric lighting. (Geissler tubes, Moore systems, cathode ray lamps, Tesla lights, etc.) (Roentgen ray tubes, 21g, 15-18.)



**21g. Electrical Appliances and Methods in General** (exclusive of electrochemical), **Including Electromagnets, Automatic Circuit Breakers, Condensers, Magnetic Devices for Relieving Pressure on Journals, Etc., and Roentgen Ray Apparatus.**

**ELECTRIC COILS, ELECTROMAGNETS, ETC. (Gr. 1-6.)**

1. Manufacture of electric coils, including those for dynamos. (Cf. gr. 6; 21a, 28; 21f.)
2. Electromagnets (in general). (Cf. 21a, 21; 21f, 17.)
3. Electromagnetic gearing. (Cf. 47h, 22; 83b, 3.)
4. Relays (in general). (Cf. 21a, 20 and 21.)
5. Devices for magnetizing and demagnetizing. (Demagnetizing of watches, 83a, 86; magnetic journal supports, 21e, 24; 47b, 8.)
6. Induction and sparking coils.

**ELECTRIC CUT OUTS. (Gr. 7-9.)**

7. Electromagnetic automatic cut outs.
8. Electrolytic automatic cut outs.
9. Electric motor cut outs.

10. Dielectric condensers. (Cf. 21a, 71.)
11. Polarization cells, electrolytic condensers, and current direction selectors; electric valves of various kinds.
12. Mercury vapor apparatus as rectifiers, etc. (Mercury vapor lamps, 21f, 82-84.)
13. Oscillatory electric rectifiers.
14. Utilization of atmospheric electricity and earth currents.

**ROENTGEN RAY APPARATUS, ETC. (Gr. 15-19.)**

15. Roentgen ray tubes; cooling devices for the electrodes
16. Regulating and determining the hardness of Roentgen ray tubes.
17. Apparatus for taking radiographs, especially for the determination of foreign bodies. (Cf. 30a, 6.)
18. Connections for Roentgen ray tubes, miscellaneous accessories. (Cf. 30a, 6.)
19. Extraction and application of radio-active materials. (Therapeutic applications, 30f, 18; 30h, 2; chemical extraction of radio-active materials, 12m, 9.)

20. Electric accessories and processes not provided for elsewhere (exclusive of gr. 1-18).

**21h. Electric Heating, Cooking, Vaporizing, Fusing, Soldering, and Welding Processes and Apparatus so Far as Relating to the Production of Heat.**

**ELECTRIC HEATING RESISTANCES (general). (Gr. 1-2.)**

1. Electric heating resistances as to their composition.
2. Electric heating resistances as to their structure.

**ELECTRIC HEATING AND COOKING. (Gr. 3-5.)**

3. Electric heating, cooking, and vaporizing apparatus.
4. Regulating and automatic circuit-breaking devices for electric heating and cooking apparatus.
5. Heating rooms by electricity.

**ELECTRIC FURNACES FOR PRODUCING INCANDESCING AND FUSING TEMPERATURES. (Gr. 6-11.)** (Cf. 18b, 21; 32a, 4, 35; 40c, 16.)

6. Electric furnaces heated by resistance in which the mass to be heated forms the heating resistance. (Cf. gr. 9.)

**21h—Continued.**

7. Electric furnaces heated by resistance in which the heating current flows through a resistance independent of the mass to be heated. (Cf. gr. 9.)
8. Electric furnaces heated by arcs.
9. Electric furnaces heated by induction currents.
10. Electric furnaces with combined heating.
11. Special forms of separate details for electric furnaces (electrodes, means for introducing the current, furnace plates, outlets, etc.).

**METAL WORKING BY MEANS OF ELECTRICALLY DEVELOPED HEAT. (Gr. 12-14.)** (Cf. 49f, 2, 11-18.)

12. Electrothermal metal working, especially electric soldering and welding processes, also electric welding apparatus. (Cf. gr. 13, 14; 49f, 18; 49h, 5.)
13. Electric soldering apparatus and soldering irons.
14. Electrochemical heating for metal working.

**CLASS 22.—DYES, VARNISH, LACQUER, PAINTS, ADHESIVES.**

**22a. Azo, Azoxy and Hydrazon Dyes.** (For azoxy dyes see the related azo dyes.)

**MONOAZO DYES. (Gr. 1-3.)**

1. Monoazo dyes in general.
2. Orthooxymonoazo dyes.
3. Monoazo dyes from primuline and similar thio bases.

**DISAZO DYES. (Gr. 4-8.)**

4. Primary disazo dyes.
5. Secondary disazo dyes.
6. Disazo dyes from diaminodiphenyl and its derivatives. (Congo dyes.)
7. Disazo dyes from phenylene and naphthylene-diamine.
8. Disazo dyes from various diamines exclusive of gr. 1-7.

**POLYAZO DYES. (Gr. 9-11.)**

9. Polyazo dyes from monoamines.
10. Polyazo dyes from diamines.
11. Polyazo dyes from polyamines. (Triaminotriphenylmethane, etc.)

12. Chrysoidine and Bismarck brown dyes.
13. Stilbene dyes.
14. Hydrazon dyes.

**22b. Di- and Tri-Phenylmethane Dyes, Phthaleins, Pyronines, Auramines, Acridines, Anthracene Dyes, and Other Oxyketone Dyes, Naphthazarine.**

1. Acridine dyes.
2. Nonnitrogenous anthracene dyes.
3. Nitrogenous anthracene dyes.
4. Auramines.
5. Oxyketone dyes from naphthaline (e. g., naphthazarine), and pyrene.
6. Oxyketone dyes from acetophenone.
7. Phthaleins without amino groups.
8. Phthaleins with amino groups.
9. Pyronines.

## 22b—Continued.

**DI- AND TRI-ARYLMETHANE DYES. (DI- AND TRI-PHENYLMETHANE DYES.) (Gr. 10-17.)**

10. Di- and tri-arylmethane dyes from aldehydes.
11. Di- and tri-arylmethane dyes from aromatic ketones. (Cf. gr. 4.)
12. Di- and tri-arylmethane dyes from hydrols.
13. Di- and tri-arylmethane dyes obtained by oxidation, including those from di-arylmethane compounds.
14. Di- and tri-arylmethane dyes of three components exclusive of aldehydes and those obtained by oxidation.
15. Transformation products of simple tri-arylmethane dyes exclusive of sulfo acids.
16. Sulfo acids of di- and tri-arylmethane dyes.
17. Treatment of residues from the manufacture of di- and tri-arylmethane dyes.

**22c. Azines, Oxazines, Thiazines, Indulines, Safranines, Eurhodines, Indophenols.**

1. Azines of the benzol series. (Eurhodines, safranines, indulines of the benzol series.)
2. Azines of the naphthaline series. (Rosinduline.)
3. Phenanthracenes.
4. Oxazines.
5. Thiazines.
6. Indophenols. (Cf. 12q and 22d.)

**22d. Dyes Containing Sulphur.**

1. Sulphur dyes from amino (also nitroamino) compounds of the benzol and naphthaline series. (Same also of the anthracene series.)
2. Sulphur dyes from nitro compounds of the benzol, naphthaline, and anthracene series.
3. Sulphur dyes from azine, oxazine, thiazine, and thiazol derivatives.
4. Sulphur dyes from urea derivatives.
5. Sulphur dyes from indamine, indophenol, and diphenylamine derivatives.
6. Sulphur dyes from other compounds than those named above.

**22e. Indigo and Other Dyes not Specified Under A-D.**

1. Indigo (natural and artificial).
2. Natural dyes other than indigo. (Cf. gr. 1.)
3. Chinoline dyes.
4. Nitro and nitroso dyes.
5. Dyes obtained by fermentation (except indigo).
6. Artificial organic dyes of unknown constitution.
7. Other organic dyes.

**22f. Pigments, Including Mineral and Bronze Colors and Lakes.**

1. White lead.
2. Lead sulphate.
3. Litharge, red lead, lead chromate, and other lead pigments not mentioned under gr. 1-2.
4. Zinc pigments. (Except zinc sulphide, etc., Gr. 5.)
5. Zinc sulphide (including "Lithopone" [barium-zinc white], etc.).
6. Barium and lime pigments.
7. Iron and chromium oxide pigments.
8. Ultramarine. (Cf. gr. 9.)
9. Silicate pigments other than ultramarine. (Cf. gr. 8.)
10. Miscellaneous pigments. (Except gr. 1-9; cf. gr. 11.)
11. Electrolytic manufacture of pigments (e. g., white lead).
12. Lakes.
13. Bronze powders, etc.
14. Lampblack. (Cf. 12i, 32.)

**22g. Inks, Marking Inks, Painters' Colors, Printers' Inks, Leather Polishes, Paints, and Color Grinding Machines.**

1. Inks, including marking inks.
2. Painters' colors. (Oil colors, resin colors, water colors, fluid bronzes, colored crayons.)
3. Color binding materials, painting mediums.
  1. Printing and stamping inks.
5. Shoe polish, leather lacquer (cf. 22h, 3, 4), leather coatings.

**LIQUID COATINGS [Paints, etc.]. (Gr. 6-11.)**

6. Wood paints; materials for rubbing; fillers.
  7. Metal paints; marine paints; protection from rust by means of paint.
  8. Paints for masonry.
  9. Roof paints (cf. 8l, 3), insulating material (cf. 39b), paints for paper. (Cf. 8l; 55f.)
  10. Coating materials for miscellaneous purposes, including those for preventing deposit or freezing of moisture on window glass (exclusive of gr. 6-9); colored leaf, including that for embossing.
  11. Coating materials for writing tablets.
- 
12. Ornamentation (imitations) by means of paints. (Cf. 75b.)
  13. Materials for corroding and removing colors and varnish.
  14. Cleaners for coated surfaces. (Cf. 23e, and 67c.)
  15. Color-grinding machines. (Cf. 50c.)

**22h. Resins, Varnishes and Lacquers, Polishes, Pitch, Tar Boilers, Dryers. [For paint or varnish.]**

1. Resins in general.
2. Varnishes and dryers.
3. Lacquers (exclusive of celluloid lacquer, gr. 4; leather lacquer, 22g, 5).
4. Celluloid lacquer.
5. Polishes, fixatives.
6. Sealing wax.
7. Pitch, tar, tar-boilers. (Cf. 10b, 7; 12r, 1.)
8. Brewers' pitch.

**22i. Cement, Glue, and Other Adhesives (also 89i); Puncture-Filling Materials for Pneumatic Tires.**

1. Cement; also puncture-filling materials for tires.
2. Adhesives.
3. Preliminary treatment of materials for making glue. (Detanning leather, removing fat from bones, macerating, etc.)
4. Processes and apparatus for extraction of glue from raw material. (Extractors, boilers.)
5. Clarifying and bleaching glue.
6. Liquid glue.
7. Insoluble gelatine, pressed gelatine.
8. Apparatus for drying glue.
9. Machines for cutting up glue.

**CLASS 23—OILS AND FATS.****23a. Extraction and Purification of Oils and Fats; Apparatus for Rendering, Cooling, and Distilling; Fats from Waste Waters; Lanoline; Extraction and Purification of Ethereal Oils; Compounding of Perfumes.**

1. Extraction of fats and oils by rendering (including cooling apparatus for fats); also by means of presses (exclusive of oil presses, 58a, b).
2. Extraction of oils and fats by solvents (including distilling apparatus appertaining thereto).
3. Purification of oils and fats (also whale oil and wax, but excluding ozokerite, 23b, 3).



## 23a—Continued.

1. Fats from waste waters (wool fat, gr. 5) and from other waste products, such as fecal matter, wool combings, etc.
5. Wool fat, lanoline, extraction and purification. (Cf. 4.)
6. Perfumes (isolation and purification of ethereal oils and artificial production of flower perfumes by synthesis).

## 23b. Mineral Oils and Illuminating Liquids Not Otherwise Specified, Paraffin and Ozokerite.

1. Mineral oils, resin oils (purification, distillation) (exclusive of tar oils, 12r, 1).
2. Paraffin
3. Ozokerite
1. Illuminating liquids and fuel liquids for motors.

## 23c. Lubricants and Solid Petroleum. (Cf. class 10b.)

1. Lubricants (containing fats or oils).
2. Emulsions of oils and fat, oils soluble in water, and means for making fat solutions chemically by the use of soaps or the like (cf. 12e, 4; 30i, 3; 53a, 6; 53h, 1, 2); turkey red oil and oils for sizing and spinning.
3. Solidifying petroleum for the making of petroleum soaps and materials for illumination and lubrication. (Cf. 10b, 11.)

## 23d. Fatty Acids, Candles (chemical part, including distilling apparatus).

1. Fatty acids (production; conversion into higher fatty acids; distillation).
2. Candles (production; chemical part).

## 23e. Soaps, Soap Preparations Inclusive of Resin Soap for Paper Sizing, Medicated Soaps, Glycerine (chemical part), Inclusive of Cooking and Distilling Apparatus.

1. Soaps (chemical part, including soap-boiling apparatus, cf. gr. 3).
2. Soap preparations, especially fillers, wash powders (for washing materials not containing soap see 8i, 5), soaps with advertising devices inserted.
3. Resin soaps for paper sizing. (Resin size.) (Cf. gr. 1.)
4. Medicated soaps.
5. Glycerine (production, purification, and distillation; also distilling apparatus).

## 23f. Soaps and Candles (mechanical part).

1. Methods and machines for forming soaps and fatty materials by molding, pressing, and printing.
2. Machines for shaving, polishing, and cutting soap.
3. Machines for the molding, cutting, and working of candles.

## CLASS 24.—FURNACES AND RELATED FEATURES.

## 24a. Furnaces for Solid Fuel in General For Industrial and Domestic Uses So Far as The Bringing About of Proper Combustion and Prevention of Smoke are Concerned, For Steam Boilers of All Kinds, for Reverberatory, Melting, Crucible, and Annealing Furnaces, for the Heating of Blast Furnaces and Kilns, for Bakers' Ovens, Brewing Coppers, and Heating and Cooking Stoves, Including Fire Places and Steam Cookers.

## FURNACES FOR SOLID FUEL IN GENERAL. (Gr. 1-14.)

1. Steam-boiler furnaces arranged in front of or beneath the boiler.
2. Internal furnaces for steam boilers.

## 24a—Continued.

3. Water-tube boiler furnaces.
4. Furnaces of the Ten Brink type.
5. Locomotive furnaces in general.
6. Separate attachments for locomotive furnaces.
7. Furnaces operating under pressure.
8. Alternately fired double-fire-box furnaces.
9. Miscellaneous steam-boiler furnaces exclusive of gr. 1-8
10. Sectional-boiler furnaces, also sectional boilers for the same. (Sectional boilers built in with heating stoves, 36a, 18.)
11. Feeding-chute [self-feed] furnaces for steam boilers.
12. Firing arrangements for heating and cooking stoves.
13. Furnaces for brewing vessels, steam cookers, bakers' ovens, etc.
14. Reverberatory furnace heating arrangements.

## FEEDING AIR TO FURNACES. (Gr. 15-17.) (Cf. 24i.)

15. Feeding air for front and underneath furnaces.
16. Feeding air for internal [fire-tube] furnaces.
17. Feeding air in general exclusive of gr. 15 and 16.

## SMOKE CONSUMPTION. (Gr. 18-22.) (Cf. 20b, 14; 65a, 26.)

18. Smoke consumption by use of semiproducer-type furnaces.
19. Smoke consumption by separate distillation and gasification. (Cf. 24c, 3.)
20. Smoke consumption brought about by introduction of steam. (Cf. 24c, and 24i.)
21. Smoke consumption by reconducting the gaseous products through the combustion chamber.
22. Smoke consumption, miscellaneous, exclusive of gr. 18-21

## 23. Miscellaneous furnaces and furnace apparatus exclusive of gr. 1-22.

## 24b. Furnaces for Liquid Fuels (burner structure, 4g), Independent Vaporizers for Liquid Fuel. (Preparation of oil gas and fat gas, class 26a.)

## FURNACES FOR LIQUID FUELS. (Gr. 1-6.)

1. Furnaces for liquid fuels without preliminary vaporization, in general.
2. Furnaces for liquid fuels with preliminary vaporization, in general.
3. Furnaces for simultaneous combustion of liquid and solid fuels.
4. Locomotive and similar furnaces for liquid fuels.
5. Furnaces with open burner pans, and those with flames burning upon the surface of a material which absorbs the oil.
6. Furnaces for automobile boilers.

## FEEDING LIQUID FUELS TO FURNACES. (Gr. 7-8.)

7. Injector-like feeding apparatus and sprayers for furnaces. (Cf. 4g, 37.)
8. Regulating devices for furnaces for liquid fuels.

## 9. Independent vaporizers for furnaces for liquid fuels

## 24c. Gas Furnaces, Including Regenerative Furnaces and Appurtenances, Retort and Muffle Furnaces, and Reverberatory Furnaces.

1. Gas furnaces.
2. Semiproducer type furnaces.

**24c—Continued.**

3. Furnaces with separate distillation and gasification. (Cf. 24a, 19.)
4. Oxy-hydrogen furnaces.
5. Heat reservoirs, recuperators for gas furnaces. (Cf. 10a, 4; 24k, 4; 36a, 8; 36b, 4.)
6. Regenerative furnaces, excepting those for chambered kilns. (Cf. 10a; 80c.)
7. Poppet valves, slide valves, etc., for gas and regenerative furnaces.
8. Gas-heating arrangements for retort furnaces. (Cf. 26a.)
9. Same, for reverberatory furnaces. (Cf. 18b, 14; 24a, 14; 31a, 2-3; 40a, 3-10, 37-40.)
10. Burners and conduits for gas furnaces. (Cf. 4 c and g; 10a, 5.)

**24d. Crematories and Refuse Consuming Furnaces.****24e. Gas Producers, Gasification Processes, Including Water Gas. (Carburetted 26c.)****MANUFACTURE OF WATER GAS. (Gr. 1-2.)**

1. Manufacture of water gas without fixation of the vapors and products of distillation.
2. Manufacture of water gas with fixation of the vapors and distillation products.

**MANUFACTURE OF PRODUCER GAS, SEMI-WATER GAS, ETC. (Gr. 3-8.)**

3. Manufacture of producer gas, semiwater gas, etc., exclusive of gr. 4-8, and producer structure in general.
4. Manufacture of producer gas, semiwater gas, etc., with separate removal of the lean and rich gases.
5. Manufacture of producer gas, semiwater gas, etc., with fixation of the distillation products in the producer by direction of the draft from above downward.
6. Manufacture of producer gas, semiwater gas, etc., with fixation of the distillation products by reconduction from the distillation space into the gasification chamber.
7. Manufacture of producer gas, semiwater gas, etc., with fixation of the distillation products in a second producer or shaft.
8. Manufacture of producer gas, semiwater gas, etc., with fixation of the distillation products by means of highly heated incombustible bodies.

**APPLIANCES AND ATTACHMENTS FOR GAS PRODUCERS. (Gr. 9-13)**

9. Apparatus for both charging and emptying gas producers. (Cf. 24h, 2.)
10. Appliances for preheating and feeding air and water to gas producers.
11. Grates and hearths for gas producers. (Cf. 24f.)
12. Appliances for stoking gas producers (including rotary gas producer walls). (Cf. 24f.)
13. Miscellaneous appliances and appurtenances for gas producers, e. g., reversing devices, safety and regulating devices, exclusive of gr. 1-12. (Gas pressure regulators, 4c, 27-32.)

**24f. Grates and Grate Cleaning. Including Stoking Apparatus.****GRATES. (Gr. 1-20.)**

1. Grates in general.
2. Double grates.
3. Grate bars in general. (Chill casting, 31c, 16; rolling, 7f, 10.)

**24f—Continued.**

4. Grate bars with exchangeable or separate faces.
5. Hollow grates with air or gas passages.
6. Hollow grates with means for circulating water.
7. Tipping and shaking grates in general. (Cf. gr. 11 and gr. 17.)
8. Tipping and shaking grates with grate parts turning or oscillating about a longitudinal axis.
9. Tipping and shaking grates with grate bars movable vertically and longitudinally.
10. Step and inclined grates in general.
11. Step and inclined grates with shaking apparatus.
12. Grates with exterior water cooling.
13. Rotary grates with horizontal axes. (Cf. gr. 8.)
14. Rotary grates with vertical axes. (Cf. gr. 20.)
15. Traveling or chain grates.
16. Basket-shaped grates in general.
17. Basket-shaped grates with shaking apparatus. (Cf. gr. 20.)
18. Removable grates.
19. Grates adjustable in a vertical direction.
20. Grates for gas producers, so far as capable of use also for other heating plants. (Cf. 24e, 11.)

**21. Grate cleaning and stoking devices. (Cf. 24e, 12.)****24g. Chimneys, Cleaning Doors, Chimney-Sweeping Appliances, Devices for Cleaning Fire Tubes and Flues, Removal of Ashes, Deposition of Smoke, Spark Arresters.**

1. Chimneys and cleaning apparatus for chimneys in general.
2. Cleaning doors for chimneys.
3. Chimney sweeping implements. (Cf. class 9, 2 and 15.)
4. Apparatus for cleaning fire tubes and flues. (Cf. class 9, 2 and 15; 13c, 5, 7.)
5. Removal of ashes in heating plants.
6. Precipitation of smoke in heating plants.
7. Spark arresters

**24h. Feeding Apparatus.****FEEDING APPARATUS FOR FURNACES INTRODUCING THE FUEL FROM ABOVE. (Gr. 1-3.)**

1. Feeding apparatus for steam-boiler furnaces.
2. Feeding apparatus for blast furnaces and gas producers. (Cf. 18a, 6; 18b, 15; 24e, 9; 40a, 10; 80c, 16.)
3. Feeding apparatus for heating and cooking stoves.

4. Feeding apparatus for furnaces in which the fuel is fed from below. (Cf. 24e, 9.)
5. Feeding apparatus for furnaces with movable grate bars.

**24i. Separate Arrangements for Supplying Steam and Air, Draft Regulators, Devices for Increasing the Chimney Draft, Injectors. (Smoke consuming, 24a, 18-22; regulating devices for heating furnaces, 36a, 5.)**

1. Draft regulators in general.
2. Draft regulators which act as heat regulators. (Cf. 36f; 42i, 13-15.)
3. Draft regulators with braking devices.
4. Injector appliances.
5. Appliances for increasing the draft of chimneys.
6. Separate mechanism for feeding air and steam to furnaces.



## 241—Continued.

7. Automatic feeding of air and steam into furnaces.
8. Appliances connected with the chimney which cooperate with the furnaces.

## 24k. Fire Doors, Fire Bridges, Baffles, and Other Inserts for Retaining Heat, Boiler Setting, Lighting, and Extinguishing Apparatus, Safety Appliances to Prevent Escape of Furnace Gases.

1. Fire doors and casings. (Fire-door setting and attachments.)
2. Fire bridges
3. Baffles
4. Furnace parts for storing up heat, blast and air heaters. (Cf. 24c, 5; 36a, 8; 36b, 4.)
5. Steam boiler setting
6. Apparatus for starting or reviving the fire in heating plants. (Cf. 34d, 7.)
7. Apparatus for automatically extinguishing the fire in furnaces
8. Safety devices to prevent escape of furnace gases.

## 24l. Furnaces for Special Fuels, as Coal Dust, Sawdust, Peat, Straw. (Enclosed furnaces, 13g.)

## FURNACES FOR SPECIAL FUELS, IN GENERAL. (Gr. 1-2)

1. Furnaces for coal dust
2. Furnaces for sawdust, peat, straw, etc.

## FEEDING FUEL TO FURNACES FOR SPECIAL FUELS. (Gr. 3-4.)

3. Feeding fuel to furnaces for coal dust. (Cf. gr. 1.)
1. Feeding fuel to furnaces for sawdust, peat, straw, etc. (Cf. gr. 2.)

## CLASS 25. BRAIDING, LACE MAKING, MACHINE KNITTING, AND TRIMMINGS.

## 25a. Knitting, Including Machine Knitting.

## STRAIGHT KNITTING MACHINES FOR SINGLE-THREAD FABRICS. (Gr. 1-6.)

1. Straight knitting machines for single-thread fabrics with one needle row and stationary needles in a horizontal plane. (Päquet machines.)
2. Same, with one needle row and stationary needles in a vertical plane. (Cotton machines.)
3. Same, with one needle row and separately movable needles. ("Flachstrickmaschinen.")
4. Same, with two needle rows and stationary needles. (Straight-rib machines.)
5. Same, with two needle rows and independently movable needles. (Lamb machines.) ("Flachstrickmaschinen.")
6. Same, with three or more needle rows and independently movable needles. ("Flachstrickmaschinen.")

## CIRCULAR KNITTING MACHINES FOR SINGLE-THREAD FABRICS. (Gr. 7-10.)

7. Circular knitting machines for single-thread fabrics with one needle row and stationary needles in a horizontal plane. (French circular machines.) [Fixed-needle dial machines.]
8. Same, with one needle row and stationary needles in a vertical plane. (English circular machines.) [Fixed-needle circular machines.]

## 25a—Continued.

9. Same, with one needle row and independently movable needles. ("Rundstrickmaschinen.")
10. Same, with two needle rows and independently movable needles. (Circular rib-knitting machines.) ("Rundränderstrickmaschinen.")

## KNITTING MACHINES FOR PURL KNITTING. (Gr. 11-12.) ("Links-und-links ware.")

11. Straight machines for purl knitting.
12. Circular machines for purl knitting.

13. Knitting machines operating in the manner of a sewing machine. [Looping machines for knit fabric]
14. Knitting machines with a spiral carrier for the fabric

## KNITTING MACHINES FOR WARP FABRIC. [Warp frames.] (Gr. 15-16.)

15. Straight knitting machines for warp fabric.
16. Circular knitting machines for warp fabric.

17. The formation of meshes and ways of producing knit goods by machine knitting
18. The making of knit articles (articles of apparel), by machine knitting.

## ELEMENTS OF KNITTING MACHINES. (Gr. 19-29.)

19. Needles.
20. Needle beds and needle guides
21. Latch openers.
22. Knitting cams.
23. Devices for transferring and casting on.
24. Welting devices.
25. Thread carriers and feeding devices.
26. Driving and stopping mechanism
27. Pattern chains.
28. Drawing-off apparatus.
29. Miscellaneous auxiliary apparatus.

30. Machines for darning stockings, for raveling out knit goods, for the making of combinations of loops, etc.
31. Ball cups, knitting implements and holders, yarn reel holders.

## 25b. Braiding and Lace Making, Including Bobbinet. (Lace worked upon a foundation fabric which is afterwards removed by chemicals, "Aetz spitzen," 52b, 10.)

## BRAIDING AND BOBBINET MACHINES. (Gr. 1-8.)

1. Braiding and bobbinet machines.
2. Carriers for braiding and bobbinet machines.
3. Devices for throwing the carriers in and out.
4. Take-ups and drawing-off apparatus.
5. Thread-crossing positioning mechanism.
6. Switch-controlling pattern mechanism. [For controlling the thread carriers.]
7. Stop mechanism.
8. Finishing devices. [Applying a dressing to the material, etc.]
9. Cane and basket plaiting machines.
10. Braids of various kinds and auxiliary means for their manufacture.

**25b—Continued.**

11. Net machines. [Tulle.]
12. Curtain and bobbinet lace machines.
13. Appurtenances for bobbinet machines.
14. Bobbinet fabrics.

**25c. Trimmings.** (Ribbon weaving, 86c.)

1. Covering. (Forming a covering by overlaying thread, wire, paper, etc.) (Cf. 21c, 7; galvanic plating of wire and metal band, 48a, 9.)
2. Crocheting, crocheting machines, crocheted lace, and its manufacture.
3. Fringe in general and its manufacture. (Fringe making on looms, 86c, 13.) Thread balls, tassels, edgings, and their manufacture. (So-called "Aetzspitzen," 52b, 10.)
4. Cords and their manufacture. (Cf. gr. 7.)
5. Ribbons and their manufacture. (Otherwise than by weaving or spinning.) (Cf. 54f, 76b, 86c, 10.)
6. Manufacture of bead chains. (Cf. gr. 5.)
7. Manufacture of beaded trimmings and beaded goods
8. Chenille and its manufacture. (Cf. 86d, 3.)
9. Insertion of ribbons into lace, etc., applying chenille dots.
10. Miscellaneous trimmings.
11. Miscellaneous auxiliaries for the making of trimmings not included in gr. 1-10.

**25d. Tapestry, Including Tufted Carpet Making, Etc.** (Needle embroidery work, 52b.)

1. Production of pictured fabric, etc., by manipulation of threads.
2. Manufacture of tufted pile carpet, etc. (Cf. 86d.)
3. Tapestries and auxiliary means for their manufacture.

**25e. Net Making.** (Wire netting, 7d.)

(Without special groups.)

**CLASS 26.—GAS MANUFACTURE, COMBUSTIBLE GASES.** (Hydrogen, 12i; producer gas, 24e; collection and distribution of gas, 4c.)**26a. Manufacture of Gas by Dry Distillation.****GAS MANUFACTURE BY DRY DISTILLATION OF SOLID FUELS.** (Gr. 1-9.) (Cf. 10a and 12r.)

1. Manufacture of gas by dry distillation of solid fuels, in general.
2. Same, with conduction of gases and vapors through the retort. (Water gas and semiwater gas, 24e, 1-8.)
3. Manufacture of gas by dry distillation of solid fuel to which other solids have been added, also gas generation by catalytic processes.
4. Gas manufacture by combined dry distillation of solid and liquid fuels.
5. Gas manufacture by dry distillation of solid materials with subsequent gasification.
6. Horizontal gas retorts; also burning out the graphite from retorts.
7. Inclined gas retorts and coal holders for same.
8. Vertical gas retorts and feed apparatus for same. (Cf. 26e, 3.)
9. (No patents).

**GAS MANUFACTURE BY DRY DISTILLATION OF LIQUID FUELS.** (Gr. 10-13.) (Cf. 12r and 24b.)

10. Gas manufacture by dry distillation of liquid fuels, in general. (Oil gas.)

**26a—Continued.**

11. Gas manufacture by dry distillation or incomplete combustion of liquid fuels with the conduction of gases or vapors through the retorts. Semi-oil gas. (Cf. 24b, 26c, 8.)
12. Gas manufacture by dry distillation of liquid fuels in the presence of gases or vapors and solid bodies.
13. Oil-gas retorts.
14. Closures for gas retorts. (Cf. 10a, 12; 12a; 12f; 24k, 1; 47f.)
15. Standpipes for gas retorts, also apparatus for the prevention and removal of obstructions in standpipes.
16. Hydraulic mains for gas retorts
17. Apparatus for exhausting the gas from gas retorts (not including pumps); also regulators for the circulation of gas. (Cf. 4c, 40.)

**26b. Fuel-Gas Preparation by the Wet Method.****ACETYLENE GENERATORS IN WHICH THE WATER IS FED FROM ABOVE AND FALLS FREELY** (Drip system.) (Gr. 1-7.)

1. Spindle valves for acetylene generators of the drip system.
2. Cocks for said generators
3. Closures in general for said generators
4. Acetylene generators with water feed from above through a central pipe.
5. Acetylene generators with water feed from above through porous material. (Cf. gr. 20.)
6. Drip system, cartridge punchers.
7. Valve constructions for generators of the drip system.

**ACETYLENE GENERATORS WITH MEANS INDEPENDENT OF THE BELL FOR REGULATING THE WATER FEED.** (Gr. 8-11.)

8. By membranes.
9. By floats. (Cf. gr. 31.)
10. By pistons.
11. In various ways exclusive of gr. 8-10.

**ACETYLENE GENERATORS WITH WATER-FEED REGULATION BY MEANS OF THE BELL.** (Gr. 12-16.)

12. By the overflow of the water
13. With water valves according to the drip system.
14. With water cocks according to the drip system.
15. With water cocks or valves according to the inundation system.
16. With displaceable water containers.

**ACETYLENE GENERATORS ACCORDING TO KIPP'S PRINCIPLE.** (Gr. 17-18.)

17. With water feed from below.
18. With water feed from above.

**ACETYLENE GENERATORS ACCORDING TO DÖBEREINER'S PRINCIPLE WITH STATIONARY CARBIDE BELL.** (Gr. 19-24.)

19. In general. (Cf. gr. 20-24.)
20. With under feed through porous material. (Cf. gr. 5.)
21. With gas-outlet cock operated by the gas holder.
22. With gas holder regulating the dip depth of the gas-outlet pipe.



## 26b—Continued.

23. With movable bell.
24. In which the carbide is moistened on the lower surface only.

## ACETYLENE GENERATORS WITH DIP FEED OF THE CARBIDE. (Gr. 25-27.)

25. Acetylene generators with interior or exterior dipping of the carbide (as the carbide is dipped into the seal water inside or outside the bell).
26. Acetylene generators with separate seal and generating water.
27. Acetylene dip-drip generators.

## ACETYLENE GENERATORS WITH CARBIDE FEED. (Gr. 28-37.)

28. Hand feed.
  29. With closure devices on the inlet shaft.
  30. With feed by flaps or slides.
  31. Feed by float valves. (Cf. gr. 9.)
  32. Feed by various kinds of valves exclusive of gr. 31.
  33. By rotary carriers, valves with measured charges, etc.
  34. By screw conveyers or conveyer belts.
  35. By rotary drums, etc.
  36. By movable plates with stationary carbide receptacle.
  37. Acetylene generators with various kinds of carbide feed (carbide in cartridges or fed from containers by means of pistons, etc.).
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38. Acetylene generators with internal pressure.
  39. Cartridges and cells for carbide.
  40. Arrangement of carbide cartridges.
  41. Rotating carbide receptacles.
  42. Storage of carbide (cans, etc.).
  43. Safety devices for acetylene generators.
  44. Methods of generating acetylene and of making preparations which yield acetylene, also acetylene solutions.
  45. Methods for the generation of mixtures of acetylene and other gases (e. g., hydrogen).
  46. Carbide preparations.
  47. Miscellaneous features in the art of gas production by the wet method (water closures, locking devices, ventilating devices for generators, cooling the generator, utilization of the sludge, sludge removers, operating means for feeding devices, pulverizing the carbide, devices for removing air from the generator).

## 26c. Carbureting Processes and Apparatus (also class 46c). Air-Gas and Other Combustible Mixtures. (Mixing apparatus, class 4c.)

## CARBURETING BY PASSING GAS THROUGH THE CARBURETING LIQUID. (Gr. 1-2.)

1. Apparatus with stationary gas-inlet pipes.
2. Apparatus with displaceable gas-inlet pipes or floats.

## CARBURETING BY PASSING GAS OVER THE CARBURETING MATERIAL. (Gr. 3-6.)

3. Apparatus in which the carbureting material is atomized. (Cf. 46c, 6-13).
4. Apparatus for passing gas over the carbureting surface without porous bodies.
5. Apparatus with porous bodies; also fillers for carbureters. (Cf. gr. 6.)
6. Apparatus with air absorption. (Cf. gr. 5.)

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## 26c—Continued.

## PRODUCTION OF COMBUSTIBLE GAS MIXTURES. (Gr. 7-9.)

7. From cold gases. (Cf. 12e, 4; 4c, 44-45.) Liquefied illuminating gas.
8. From oil gasified by heat. (Cf. 26a, 11.)
9. Carbureting by means of solid carbureting materials.

10. Carbureting devices with rotating parts.
11. Regulation of supply of air and material in carbureting devices according to consumption.
12. Carbureting means in general, including perfuming materials, additions to illuminating gas to prevent freezing and naphthalene clogging; also devices for heating and feeding carbureters, air compressing devices for carbureting purposes.

## 26d. Gas Purification. (Cf. 12c.)

1. Coolers and condensers, tar separators and gas filters for gas purification. (Cf. gr. 2, 5, 8; 12e, 2.)

## GAS WASHERS AND SCRUBBERS. (Gr. 2-4.)

2. Stationary gas washers and scrubbers.
3. Rotating gas washers.
4. Spraying devices for gas washers and scrubbers.

5. Dry purifiers for gas. (Cf. gr. 1.)
6. Hurdles and grates for gas washers and gas purifiers.
7. Center and by-pass valves for gas purifiers.
8. Chemical methods of gas purification, especially separation of ammonia (cf. 12k, 2), cyanogen compounds (cf. 12k, 9), and sulphur compounds from the gas. Revivification of gas-purifying materials.
9. Purification of acetylene.

## 26e. Chargers and Dischargers for Gas Retorts.

1. Chargers for horizontal gas retorts.
2. Chargers for inclined gas retorts.
3. Chargers for vertical gas retorts. (Cf. 26a, 8.)
4. Chargers and dischargers combined for horizontal gas retorts.
5. Dischargers for gas retorts.
6. Chargers and dischargers for gas retorts, miscellaneous (exclusive of gr. 1-5); auxiliary devices and accessories.
7. Devices for quenching and conveying coke. (Cf. 10a, 16; 81e, 1-18.)

## CLASS 27.—BLOWERS AND VENTILATORS.

## 27a. Bellows. (Without special groups.)

- 27b. Cylinder Blowers; Compressors, air pumps (cf. also 63e and 421); Compression of Gases by Water Pressure (except jet blowers, 27d). (Valve structure, 47g, pressure equalizers, 14g.)

## AIR COMPRESSORS. (Gr. 1-9.)

1. Steam-driven air compressors.
2. Steam and water driven air compressors.
3. Air compressors with other driving means not included in gr. 1-2.
4. Hydraulic air compressors. (Cf. 27d, 1.)

## 27b--Continued.

5. Floats for hydraulic air compressors.
6. Miscellaneous air compressors.
7. Control devices [valve gear, etc.] for compressors.
8. Safety devices, nozzles, and other elements of air compressors.
9. Pressure regulators for air compressors.

## AIR PUMPS. (Gr. 10-16.)

10. Air pumps with reciprocating pistons.
11. Hydraulic air pumps.
12. Hand or foot operated piston air pumps.
13. Air pumps with mechanism to lessen clearance.
14. Miscellaneous air pumps not included in gr. 10-13.
15. Control gears for air pumps.
16. Elements of air pumps.

## 27c. Rotary Blowers.

## ROOT TYPE [positive] BLOWERS. (Gr. 1-2.)

1. Root type blowers with two axes.
2. Root type blowers with a single axis.

## 3. Screw blowers.

## CENTRIFUGAL BLOWERS. (Gr. 4-5.)

4. Centrifugal blowers with distributors [diffusers].
5. Centrifugal blowers without distributors.

## VENTILATORS [fans and blowers]. (Gr. 6-10.)

6. Ventilators driven by wind or water. (Cf. 36d, 6.)
7. Ventilators driven by hand.
8. Ventilator vanes.
9. Regulating devices for ventilators.
10. Miscellaneous ventilators not included in gr. 6-9.

11. Peculiar forms of blowers and special arrangements for blowers.

## 27d. Jet Blowers.

1. Air pumps with jet apparatus. (Cf. 27b, 4.)
2. Blowers with jet apparatus. (Cf. 59c.)
3. Nozzles for jet blowers.

## CLASS 28.—TANNING, HIDE TREATMENT, AND LEATHER WORKING.

## 28a. Tanning. Including Tanning Materials, Impregnating and Preserving of Leather. (Patent leather, see also class 22h.)

## PRELIMINARY TREATMENT OF HIDES FOR TANNING. (Gr. 1-2.)

1. Soaking, sweating, liming, and depilating of hides. (Cf. 66a, 7.)
2. Bating and cleaning, deliming of hides.

## TANNING IN GENERAL. (Gr. 3-4.) (Cf. gr. 5-8 and gr. 12.)

3. Vegetable and mineral tanning, combination tanning, tawing, kid leather, and chamois tanning.
4. Quick tanning (under pressure, in vacuum, with agitation of the liquor, spraying, agitation of the hides or agitation of both the hides and the liquors, also with concentrated liquors). (Cf. gr. 12.)

## 28a--Continued.

## SPECIAL TANNING PROCESSES. (Gr. 5-8.) (Cf. gr. 3-4.)

5. Tanning with electricity.
6. Tanning with special chemicals (formaldehyde, picric acid, sulphite liquor, dyewood extract, etc.).
7. Partial tanning, tanning prepared hides, tanning the flesh side different from the grain side, preliminary tanning with naphthalene, etc.
8. Production of miscellaneous leather articles, such as tires, stuffing-box packing, etc., special tanning processes for leather belts, leather made of intestines, etc.

## FINISHING LEATHER. (Gr. 9-11.)

9. Stuffing with oil, softening and waterproofing, hardening, preserving the leather, also rawhide (methods). (Cf. 23c; 28b, 13.)
10. Preliminary treatment for making patent leather. (Cf. 22g, 5; 75c, 5.)
11. Pebbling (Cf. 8m, 10; 75b, 11, 19) artificial graining so far as related to special preliminary treatment of the leather. (Cf. 28b, 18; 75c, 5.)

12. Special apparatus for the preliminary treatment, tanning, and finishing, according to specified processes (tanning vats). (Cf. 28b, 27.)
13. Tanning agents (production and purification for tanning purposes only). (Cf. 12q, 29.)

## 28b. Mechanical Treatment of Pelts, Hides, and Leather in General, also Dyeing Apparatus for Hides, Shearing Apparatus for Furs, Leather-Belt Manufacture, and Apparatus for Splitting Intestines. (Saddlery, 56a, b, 63a; Boots and shoes, 71a-c.)

## APPARATUS FOR FLESHING AND DEPILETING HIDES AND PELTS. (Gr. 1-3.)

1. In general.
2. With stretching drums, or cylindrical or conical work support.
3. With horizontal tables, vertically reciprocating tables, or series of tables.

## PUTTING OUT AND STRETCHING. (Gr. 4-7.)

4. Methods and apparatus for putting out, stretching, and drying leather in general.
5. Leather-stretching apparatus with cylindrical work supports.
6. Leather-stretching apparatus with vertically reciprocating tables or series of tables.
7. Stretching frames, clamping devices.

## APPARATUS FOR SETTING OUT, PARING, SKIVING, AND SPLITTING. (Gr. 8-11.)

8. Apparatus for setting out of the grain.
9. Apparatus for paring and skiving.
10. Methods and apparatus for splitting leather, inclusive of devices for printing the results of measurements by measuring machines for hides, etc.
11. Apparatus for cutting, stamping, and punching hides, leather, etc.

## ROLLING, HAMMERING, SOFTENING, POLISHING, GRINDING, ORNAMENTING, AND ROLLING UP OF LEATHER. (Gr. 12-19.)

12. Leather rolling and hammering apparatus.
13. Apparatus for softening leather (e. g., by softening and pommeling machines). (Cf. 28a, 9.)



## 28b—Continued.

14. Methods and apparatus for polishing and drying leather.
15. Leather-grinding apparatus.
16. Apparatus for graining, shagreening, and brushing leather.
17. Apparatus for dyeing and drying hides, leather, etc. (Cf. 8m, 10.)
18. Apparatus for producing designs on leather, etc. (Cf. 28a, 11; 75b, 11, 19.)
19. Apparatus for rolling up leather [as for storage or shipment].

## LEATHER BELTS. (Gr. 20-23.)

20. Methods and apparatus for the making of leather belts.
21. Stretching machines and frames for leather belts.
22. Apparatus for cutting and punching leather belts. (Cf. gr. 11; 54d, 2, 3.)
23. Machines for edging and beveling leather.

24. Apparatus for splitting intestines. (Cf. 66b, 15.)
25. Pelt shearing and pulling machines.
26. Tanner's tools
27. Rotary drums and frames for leather. (Cf. 28a, 12.)
28. Miscellaneous devices and methods for mechanical treatment of hides and leather, exclusive of gr. 1-27.

## CLASS 29.—TEXTILE FIBERS.

## 29a. Mechanical Preparation of Textile Fibers.

1. Separation of fibers from seeds, e. g., ginning cotton and the like.
2. Separation of vegetable fiber from stalks and leaves. (Breaking, scutching, and fiber-extracting machines, etc.)
3. Hackling machines.
4. Apparatus for retting and drying flax.
5. Extraction of peat fibers.
6. Making artificial silk (Cf. chemical process, 29b, 3.)
7. Miscellaneous devices, etc., for mechanical liberation of textile fibers not included in gr. 1-6.

## 29b. Chemical Preparation of Textile Fibers, Including Carbonizing.

1. Chemical preparation and cleaning of animal textile fibers, removing fat from hides and bird skins.
2. Chemical preparation and cleaning of vegetable textile fibers, bacterial retting processes.
3. Manufacture of artificial textile fibers, especially artificial silk, and processes for producing silk effects. (Cf. 29a, 6.)
4. Processes and apparatus for carbonizing textile fibers; also drying in combination with carbonizing. (Drying processes for textile fibers, 82a.)
5. Chemical preliminary treatment of textile fibers for spinning.
6. Processes and apparatus for conditioning silk and other textile fibers.

## CLASS 30.—SANITARY AND VETERINARY SCIENCE.

## 30a. Instruments, Appliances, and Methods for Diagnostic and Surgical Purposes, Including Obstetrical Appliances, Corn Knives, and Inoculating Instruments.

## DIAGNOSIS. (Gr. 1-7.)

1. Instruments for illuminating, viewing, and photographing cavities of the body. (Cf. gr. 2; 57a, 7.)

## 30a—Continued.

2. Specula. (Cf. gr. 1.)
3. Instruments for testing acuteness of vision, refraction, and accommodation; also color blindness. (Cf. 42h, 32.)
4. Measuring and registering instruments for diagnostic purposes. (Cf. 42b, 7, 42d; 43b, 43.)
5. Instruments for percussion and stethoscopy.
6. Apparatus for miscellaneous diagnostic uses; also for Röntgen ray diagnosis so far as the mechanical arrangement is concerned.
7. Instruments for opening the oral cavity and retaining it open, tongue depressors, and tongue scrapers. (Cf. 30c, 3.)

## SURGERY. (Gr. 8-19.)

8. Devices for maintaining wounds open or sewing them up, the storing of suture materials, devices for ligating and joining blood vessels; also forceps.
9. Bone saws, osteoclads, bone incisors. (Trepan.)
10. Instruments for inoculation and for cleaning the skin previous to inoculation.
11. Instruments for tying off, squeezing off, and scraping out; also calculus removers.
12. Surgical instruments for use in the oral cavity (tonsillotomes) the larynx, and bronchial passages. (For diagnosis, gr. 1.)
13. Cauterization instrument.
14. Obstetrical instruments and cases therefor.
15. Chiropodist's knives, shavers, and files. (Cf. 69, 21.)
16. Surgical shears and forceps in general.
17. Surgical knives and cutting instruments in general.
18. Instruments for removing foreign objects from parts of the body.
19. Protecting and disinfecting appliances for thermometers, packing physicians' instruments; also operating gloves (cf. 39a, 10), and other auxiliary devices for surgical purposes.

## 30b. Dental Surgery, Artificial Teeth, Cleaning the Teeth, Toothpicks, Mouth-Rinsing Apparatus, Appliances for the Care of the Mouth and Teeth. (Toothbrushes, class 9.) (Veterinary dentistry, 30c, 4.)

## DENTAL SURGERY. (Gr. 1-8.)

1. Dental machines for boring, cutting, etc. (Cf. gr. 4-5.)
2. Hand pieces and tool holders for dental machines and instruments. (Cf. 87d, 3.)
3. Tooth pluggers and hammers. (Cf. gr. 6.)
4. Tooth boring and cutting instruments. (Machines, cf. gr. 1.)
5. Grinding and polishing of teeth, also tooth saws. (Separating teeth, gr. 9, machines therefor, gr. 1.) (Cf. gr. 19.)
6. Filling and capping teeth, crowns, treatment of roots and nerves, amalgam presses. (Presses and punches, gr. 12; casting apparatus, gr. 17; filling materials, 30h, 12; pluggers, gr. 3.)
7. Tooth clamps and cofferdam holders, lip protectors, etc. (Devices for holding the tongue and retaining the mouth open, 30a, 7.)
8. Instruments for extracting and decrowning teeth.
9. Devices for straightening and evening the teeth, also for separating the teeth. (Saws, gr. 5.)

## ARTIFICIAL TEETH. (Gr. 10-17.) (Materials for artificial teeth, 30h, 7.)

10. Impression cups.
11. Articulators. (Articulation forms.)

## 30b—Continued.

12. Processes and apparatus for making plates and for pressing and stamping. (Presses for vulcanizing cups, gr. 16; amalgam presses, gr. 6; casting apparatus, gr. 17.)
13. Artificial dentures, bridges, and means for fastening same in the mouth.
14. Artificial teeth and fastening same on plates.
15. Peg [pivot] teeth, crowns, and fastening same in the mouth. (Cf. gr. 6.)
16. Vulcanizing apparatus for artificial teeth, vulcanizing cups ["cuvettes"], and presses therefor. (Cf. 39a, 11.)
17. Soldering, casting, and fusing apparatus for dental purposes.

## TOOTH-CLEANING AND MOUTH-RINSING APPARATUS. (Gr. 18-20.) (Toothbrushes, 9, 21.)

18. Toothpicks and devices for cleaning between the teeth.
19. Implements and machines for scouring, rinsing, and drying the teeth and tooth cavities, also mouth-rinsing apparatus. (Cf. gr. 1, 5.)
20. Spittoons and saliva removers for dental use. (Spittoons in general, 34f, 10; pocket spittoons, 30g, 14.)

21. Auxiliary implements for dental use, exclusive of gr. 1-20, e. g., work stands and accessories, measuring instruments, teaching appliances, apparatus for administering gas, etc.

## 30c. Veterinary Instruments, Appliances, and Machines.

1. Surgical instruments for veterinary use, also clip-pers for tail and ears. Altering instruments.
2. Labor indicators and veterinary obstetrical instruments, also embryotomic instruments.
3. Mouth openers and instruments for removing foreign bodies from the throats of animals. (Cf. 30a, 7 and 18.)
4. Instruments for treating teeth of animals. (Cf. 30b.)
5. Appliances for supporting and fettering animals during operations. (Cf. 45h, 9; 56a, 26; 66a, 4.)
6. Devices for introducing solid, liquid, or gaseous remedies into the animal's body. (Cf. 30g, 8; 30k, 17-19.)
7. Bandages, dressings, and washing devices, also prolapsis appliances and thermometers for veterinary use. (Cf. 30d, 7-25.)

## 30d. Artificial Limbs, Splints, Bandages, Bindings, and Poultices, Including Trusses, Ice Bags, Suspensories, Urinals, Apparatus for Prevention of Bed Wetting and Pollution, Pessaries, Orthopedic and Similar Irons, Supports for Flat Feet, Corn Protectors, Respirators and Antisnoring Appliances; Ophthalmology and Aural Surgery; Eye and Ear Protectors, e. g. goggles, artificial eyes, sound dampers, and artificial eardrums.

## ARTIFICIAL LIMBS AND APPURTENANCES. (Gr. 1-3.)

1. Artificial limbs in general. (Cf. gr. 2-3.)
2. Artificial arms and hands.
3. Artificial legs and feet, including wooden legs.

## SPLINTS AND THE LIKE FOR ORTHOPEDIC PURPOSES. (Gr. 4-6.)

4. Orthopedic corsets, etc. (Cf. 70d, 8.)
5. Devices for treatment of flat feet, club feet, deformed noses, etc. Finger formers (Cf. gr. 22), remedial apparatus for stutterers. (Cf. gr. 20.)
6. Stretching presses. (Cf. gr. 4; 30e, 8.)

## 30d—Continued.

## BANDAGES AND LIKE SUPPORTS FOR TREATMENT OF INVALIDS. (Gr. 7-20.)

7. Trusses with belt springs.
8. Trusses without springs and with or without yieldable pads, including umbilical trusses.
9. Pads in general.
10. Adjustable pads.
11. Pads containing air or liquid, also valves for pneumatic pads. (Cf. 30e, 11.)
12. Auxiliary remedial devices for treatment of hernia. (Cf. 30e, 8.)
13. Body bandages [belts] for invalid use; (For lacing purposes [as corsets], 3a, 14), also supports for treatment of sclerosis, with or without pads. (Cf. gr. 8.)
14. Catamenial bandages and pads.
15. Suspensories, etc.
16. Urinals.
17. Pessaries, devices for inserting same, and protective devices in connection therewith. (Cf. gr. 15.)
18. Devices to prevent bed wetting and soiling.
19. Elastic stockings. (Cf. 3a, 10; 39a, 10.)
20. Respirators and devices to prevent snoring.

## WOUND DRESSINGS. (Gr. 21-23.) (Bandage materials, 30i, 8.)

21. Wound dressings in general, plaster of Paris bandages, etc.
22. Wound dressings for special purposes (for aneurism, corn rings, wound protectors, finger stalls. Cf. gr. 5.)
23. Auxiliary appliances for bandaging, holders for dressings, bandage holders, bandage shears, etc. (See also 69, gr. 1-9.)

## POULTICES, ETC., FOR TREATMENT OF THE SICK. (Gr. 24-25.)

24. Poultices.
25. Heating or cooling devices. (Hot compresses and ice bags.)

## OPHTHALMOLOGY, INCLUDING PROTECTION OF THE EYES. (Gr. 26-27.)

26. Treatment of the eyes, also artificial eyes.
27. Goggles and eye-protecting masks. (Cf. 42h, 31; 61a, 19.)

## AURAL SURGERY AND PROTECTION OF THE EARS. (Gr. 28-29.)

28. Treatment of the ears; also ear trumpets and artificial ear drums.
29. Sound dampeners as a means of protecting the ears. (Cf. sound dampeners of other kinds, 14g, 10; 46c, 29-30; 72a, 28.)

## 30e. Transportation of Invalids; Invalid Beds and Appurtenances, Including Bed Pans; Operating Tables and Chairs, Including Dental; Burial Apparatus.

## TRANSPORTATION OF THE SICK. (Gr. 1-4.) (Cf. gr. 9.)

1. Litters for transportation of the sick.
2. Wheeled stretchers.
3. Ambulances. (Cf. gr. 9.)
4. Invalid chairs. (Cf. gr. 15.)



## 30e—Continued.

## INVALID BEDS, ETC. (Gr. 5-13.)

5. Invalid and operating beds. (Bedsteads, 34g, 11.)
6. Invalid beds with toilet conveniences.
7. Bed fittings. (Mattresses for the sick, mats for beds, etc.) (Cf. 34g, 17-18.)
8. Auxiliary devices to be attached to the bed. (Cf. 34i, 3.)
9. Transporting apparatus for invalid beds. (Cf. gr. 3.)
10. Invalid-lifting apparatus.
11. Pneumatic cushions. (Cf. 30d, 11; 39a, 10.)
12. Bedpans.
13. Baby incubators. (Poultry incubators, 45h, 13.)

## OPERATING TABLES AND CHAIRS, INCLUDING DENTAL CHAIRS. (Gr. 14-15.)

14. Operating tables.
15. Operating chairs; also dental chairs. (Cf. gr. 4.)

## BURIAL APPARATUS. (Gr. 16-19.) (Embalming, 30i, 9.)

16. Coffins.
17. Coffin closures and packing therefor.
18. Hoisting and lowering devices for coffins.
19. Columbaria.

## 30f. Remedial Gymnastics, Including Breathing Exercises (indoor apparatus for gymnastics, 77a), Massage and Bathing Apparatus for Curative Purposes, Including That for Local Treatment (e. g., bidets), Electro, Magneto, and Radio-therapeutics.

## CURATIVE GYMNASTICS AND BREATHING EXERCISES. (Gr. 1-6.)

1. Apparatus for active curative gymnastics. (Gymnasium apparatus, 77a.)
2. Apparatus for passive curative gymnastics. (Vibration apparatus.) (Cf. gr. 3.)
3. Stretching and bending apparatus for curative gymnastics. (Stretching bandages, 30d, 6.)
4. Devices for aiding invalids to move about, including crutches. (Cf. 77a, 9; children's wheeled chairs, 34h, 1.)
5. Apparatus for breathing exercises and for artificial breathing. (Cf. 30k, 13.)

## MASSAGE. (Gr. 6-8.)

6. Kneading and rubbing massage (also appliances for rubbing and brushing the skin, and for suction-kneading massage). (Cf. gr. 8.)
7. Percussion massage (vibration massage, also suction-vibration massage). (Cf. gr. 8.)
8. Massage with simultaneous use of electricity.

## BATHING APPARATUS FOR SPECIAL CURATIVE PURPOSES. (Gr. 9-11.) (Cf. 34k, 1-5.)

9. Baths with gas-containing liquids (e. g., so-called carbonic acid baths, cf. 30h, 11.)
10. Hot-air and cold-air baths, steam and gas baths or douches. (Cf. 30b, 19; pneumatic chambers, 30k, 13.)
11. Bathing apparatus for special curative purposes and for separate parts of the body, including simple bidets. (Cf. gr. 15; 30k, 6-7; 30k, 1-5.)

## 30f—Continued.

## ELECTROTHERAPEUTICS. (Gr. 12-15.)

12. Electric girdles and belts.
13. Electrodes for treatment of the sick (e. g., electric brushes and combs). (Cf. gr. 8, 12; class 9, 22.)
14. Electrotherapeutic apparatus, induction apparatus (switch devices, high frequency apparatus, etc.).
15. Hydroelectric baths.

## RADIOTHERAPEUTICS AND MAGNETIC TREATMENT. (Gr. 16-18.)

16. Treatment with light (with ultraviolet, gr. 18).
17. Treatment with magnetism.
18. Treatment with radium or with Roentgen rays or other forms of radiant energy not included in gr. 16.

## 30g. Pharmaceutical Implements and Machines, Devices for Administering Medicines, Nursing and Feeding Bottles, Spittoon Flasks.

## PHARMACEUTICAL DEVICES AND MACHINES. (Gr. 1-7.)

1. Dropping devices for pharmaceutical uses (e. g., dropping glasses and stoppers).
2. Measuring containers for pharmaceutical purposes (e. g., measuring flasks for medicines). (Cf. gr. 8; 64c, 43.)
3. Bottles and bottle closures for medicines. (Cf. gr. 1, 2, 4, 5, 64a.)
4. Poison flasks, poison and other cases for druggists.
5. Closures for containers for volatile fluids. (Cf. gr. 3.)
6. Capsules, bags, and containers for pharmaceutical purposes (not in gr. 1-5) and filling devices therefor, also apparatus for dividing powders, etc. (Paper boxes and bags, 54b, 3-4; capsules with medicines therein, 30h, 10.)
7. Machines for making pills, lozenges, tablets, plasters and salves, and other pharmaceutical apparatus. (Cf. 30h, 9; lozenge presses, 58b, 13.)

8. Devices for administering medicines. (Medicine spoons, pill counters, etc.) (Cf. gr. 2; 30c, 6.)

## NURSING AND FEEDING BOTTLES, ETC. (Gr. 9-13.)

9. Nursing bottles in general. (Cf. gr. 10-11.)
10. Nursing bottles with thermometric arrangements.
11. Nursing bottles with means for supplying air.
12. Holders for nursing bottles.
13. Baby comforters, nipples, and drinking tubes.

14. Spittoon flasks (pocket spittoons). (Cf. 34f, 10.)

## 30h. Curative Methods (not Surgical), Medicines, Dentistry (Chemical), Cosmetics.

1. Nonsurgical curative processes, e. g., inhalation of internal disinfectants. (Cf. 30i, 1.)
2. Medicines in general, without mention of any particular disease; radioactive remedies.
3. Medicines for specifically named diseases, also dietetic preparations, as "heilbrot," means for protection from stings of insects; preventives of seasickness.

## 30h—Continued.

4. Preventives of decomposition or antiseptic remedies both for man and beast. (Cf. 30i.)
5. Anesthetics. (Cf. 30k, 14-16.)
6. Remedial serums and antitoxins (e. g., bacillus extracts).
7. Remedial extracts from glands, and the like.
8. Iron, blood, gelatin, ichthyol, fat and tar preparations for remedial purposes (iron compounds in general, 12n, 2), also albuminous preparations for remedial use. (Cf. 12p, 16; 53i.)
9. Medicinal powders, lozenges, salves, and plasters (tooth powder, gr. 13; baking powder, 2c, 2; machines for making lozenges, etc., 30g, 7.)
10. Medicine capsules. (Capsules containing medicine.) (Cf. 30g, 6.)
11. Bath compounds and the preparation of baths. (Cf. 30f, 9.)
12. Dentistry, chemical part (e. g., materials for filling teeth). (Cf. 30b, 6.)
13. Cosmetics.
14. Bacteriological supplies (e. g., micromembranes, etc.).

**30i. Disinfecting and Sterilizing Processes and Apparatus** (also classes 6d, 53c, and 85a, h). **Materials for Bandages, Embalming.** (Disinfectants as medicines, 30h, 4.)

## DISINFECTING AND STERILIZING. (Gr. 1-6.) (Cf. gr. 8.)

1. Disinfecting and sterilizing processes in general (cf. gr. 2-8; inhalation of agents for internal disinfecting, 30h, 1; sterilization of milk, 53c; of beer and wine, 6d, 1-2).
2. Disinfecting and sterilizing apparatus in general. (Cf. gr. 4-6 and 8; telephones with means for preventing transmission of disease, 21a, 38; disinfecting apparatus for water-closets, 85h, 17.)
3. Disinfectants and preserving agents in general. (Cf. gr. 4-6 and 8; antiseptics, 30h, 4.)
4. Disinfection by means of formaldehyde, including apparatus. (Cf. gr. 3.)
5. Disinfecting, sterilizing, and purifying of air, including apparatus.
6. Disinfecting and sterilizing in connection with barbers' and hairdressers' work, including apparatus. (Barbers' implements, disinfecting, 33c, 9.)

7. Methods and materials for restraining or binding dust, disinfection of refuse.
8. Materials for bandaging and their disinfection and sterilization, including apparatus.
9. Embalming, including apparatus.

**30k. Suction, Pumping, Syringing, and Spraying Apparatus for Remedial Purposes, Including Cupping Glasses, Breast Pumps, Irrigators, Syringes, Insufflators, and the Like, Bidets with Syringes, Atomizers, Inhalation Apparatus, and Apparatus for producing anesthesia and sleep; Catheters, Dilators, Introduction of Remedial Agents into Cavities of the Body.**

## SUCTION AND PUMPING APPARATUS FOR MEDICAL PURPOSES. (Gr. 1-2.)

1. Suction and pumping apparatus for medical purposes in general. (Nursing bottles, 30g, 9-13; saliva removers, 30b, 20.)
2. Cupping glasses and breast pumps.

## 30k—Continued.

**SYRINGES FOR REMEDIAL PURPOSES.** (Gr. 3-7.) (Cf. 30c, 6.)

3. Injection syringes. [Hypodermic, and the like.]
4. Other medical syringes exclusive of gr. 3; e. g., enema syringes, and appurtenances.
5. Irrigators.
6. Bidets with syringing devices. (Simple bidets, 30f, 11.)
7. Douches and cleansing apparatus for special remedial purposes. (Cf. gr. 5.)

**ATOMIZERS FOR REMEDIAL PURPOSES.** (Gr. 8-13.)

8. Atomizer bottles for medicines. (Laboratory wash bottles, 42l, 3.)
9. Compressed-air atomizers for fluids. (Perfume and medicines.) (Cf. 36d, 14 and 15; 75c, 22.)
10. Steam atomizers for fluids. (Perfume and medicines.)
11. Insufflators, and the like, for medical use. (Cf. 33c, 12; 45k, 4.)
12. Inhaling apparatus for remedial purposes.
13. Breathing apparatus for remedial purposes. (Breathing free air, pneumatic breathing chambers.) (Cf. 30f, 5; 61a, 19.)

**APPARATUS FOR PRODUCING ANESTHESIA AND SLEEP.** (Gr. 14-16.) (Anesthetics, 30h, 5.)

14. Apparatus for producing insensibility by inhaling stupefying gases or vapors. (Narcosis.) (Cf. 61a, 19.)
15. Apparatus for producing local anesthesia
16. Apparatus for inducing sleep by mechanical agencies.

**APPARATUS FOR INTRODUCING MEDICINES INTO CAVITIES OF THE BODY, AND RELATED INVENTIONS.** (Gr. 17-19.) (Cf. gr. 3-6; 30c, 6.)

17. Catheters and probes with or without means for introducing medicines. (Probes for diagnosis, 30a, 1.)
18. Dilators, with or without means for introducing medicines.
19. Apparatus for introducing medicines into cavities of the body exclusive of gr. 17-18.

## CLASS 31.—METAL FOUNDRY, INCLUDING MOLDING.

**31a. Melting and Other Furnaces For Metal Casting, Especially of Iron.**

1. Cupola furnaces.
2. Reverberatory furnaces for casting. (Cf. reverberatory furnaces also in 18b; 24c, 9; 32a, 1-4; 40a, 8; firing of reverberatory furnaces, 24a, 14.)
3. Crucible furnaces, crucibles, kettle furnaces, and kettles. (Cf. 40a, 9; 80b, 8.)
4. Drying furnaces for molds. (Dryers, 82a, 2.)
5. Miscellaneous, e. g., tap hole closures, and other elements.

**31b. Molding Machines.** (For metal founding.) (Cf. 32a, 80a.)

1. Mechanically driven molding machines.
2. Hand operated molding machines.
3. Molding machines with rotary molding tables.
4. Roller molding machines.
5. Rammers and screw molding machines; tube molding machines. (Cf. 80a, 13.)



## 31b—Continued.

6. Machines for molding pulleys.
7. Machines for molding wheels, and other template molding machines.
8. Machines for molding hollow ware.
9. Core molding machines.
10. Miscellaneous molding machines.
11. Elements of molding machines.

## 31c. Casting and Molding in General.

## MOLDING FOR METAL FOUNDING, ESPECIALLY OF IRON. (Gr. 1 to 9.)

1. Molding and core materials.
2. Pattern and mold powder.
3. Materials for lining molds.
4. Apparatus for lining molds and applying coatings to cores.
5. Processes of making molds. (Cf. 80a, 42, 45 and 46.)
6. Apparatus for manipulating mold materials. (Cf. 1a and b.) [1a should be 31a?]
7. Auxiliary implements for molding. (Dowels, core supports, tools.) (Cf. 80a.)
8. Flasks and core boxes, shaper plates and molding frames, patterns and pattern plates. (Cf. 80a, 42 and 46.)
9. Miscellaneous, e. g., making molds and cores for special casting, as journal boxes and bearings.

## METAL CASTING, ESPECIALLY OF IRON. (Gr. 10 to 25.) (Type casting, 15a, 23 to 29.)

10. Making ingots. (Cf. gr. 27.)
11. Production of dense castings by the use of presses.
12. Production of dense castings under gas pressure and in a vacuum.
13. Production of dense castings by the use of electricity.
14. Production of dense castings by heating the dead-head.
15. Miscellaneous processes for production of dense castings.
16. Making chilled castings, e. g., rollers, wheels, projectiles (Cf. 72d), grate bars (Cf. 24f).
17. Casting parts together, casting of armor plates. (Cf. 65e, 3.)
18. Centrifugal casting for metals. (Cf. 80a, 33 and 53.)
19. Casting of metal tubes, especially of iron, and similar objects. (Cf. 80a, 33.)
20. Art casting and casting in which the mold is overturned and the remaining fluid metal poured out.
21. Casting in indefinite lengths for wire bars and wire. (Cf. 7b, d, f.)
22. Casting electric storage battery plates and grids. (Cf. 21b, 18, 19; 49i, 4.)
23. Casting aluminum and other light metals.
24. Casting around objects, joining objects by casting, casting in linings.
25. Casting various metal objects, preferably in metal molds.

## CASTING APPARATUS. (Gr. 26 to 32.) (Type casting, 15a, 23 to 29.)

26. Casting machines. (Cf. 15a, 25.)
27. Ladles. (Cf. 15a 24; 32a, 6; 35b, 1.)
28. Casting tables. (For plate glass, 32a, 19, 20.)
29. Metal founding plants.
30. Auxiliary apparatus for metal founding, exclusive of groups 26 to 29.
31. Ejectors for ingots and cast articles. (Cf. gr. 10.)
7. Mouth glass blowing in general. (Cf. gr. 8 and gr. 10.)

## 31c—Continued.

32. Cleaning apparatus for castings. (Rumbles 67a, 23; drums for treatment of objects by streams of sand, 67b.)

## 33. Miscellaneous.

## CLASS 32.—GLASS.

- 32a. Manufacturing, e. g., Fusing, Clearing, Pouring and Measuring; Molding, e. g., Blowing, Pressing, Drawing, Rolling and Making Wire Glass; also Finishing Operations, as Cooling, Hardening, Flattening, Reheating and Opening up Cylinders. (Grinding, polishing, class 67.)

## MANUFACTURE OF GLASS BY FUSION OF THE RAW MATERIALS. (Gr. 1-6.)

1. Tank furnaces.
2. Pot furnaces and pots.
3. Combined tank and pot furnaces.
4. Other glass fusing furnaces exclusive of groups 1 to 3, especially cupola furnaces and electric furnaces. (Appliances for electric glass fusing furnaces not peculiar to glass making, 21h, 6-11.)
5. Auxiliary apparatus for use in glass fusing exclusive of gr. 6, e. g., tap holes, clearing and charging apparatus.
6. Pouring and measuring apparatus for molten glass provided it forms a part of the melting furnace

## FIRST MANIPULATION OF GLASS FROM THE FUSED CONDITION. (Gr. 7-24.)

7. Mouth glass blowing in general. (Cf. gr. 8 and gr. 10.)
8. Mouth glass blowing for making special forms of objects. (Blowing glass letters, gr. 18.)
9. Compressed air glass blowing, for the purpose of finishing a blank formed by hand on the blow iron. (Cf. gr. 10.)
10. Swinging apparatus for plate glass blowing (compressed air or mouth blowing.)
11. Sievert glass blowing processes and combinations of the same with other glass-forming processes in one operation.
12. Compressed air glass blowing in casting and blowing machines with a casting core (the neck opening of the bottle blank being formed by pressing or casting over a movable or fixed core).
13. Compressed air glass blowing in casting and blowing machines with an inserted core. (the neck opening of the bottle blank being formed by forcing in a core), also with a casting core and inserted mandrel.
14. Compressed-air glass blowing in pressing and blowing machines (the hollow bottle blank, the bottom of which is not materially thicker than the walls, being formed by pressing).
15. Elements of compressed air glass blowing apparatus of groups 12 to 14 (particularly for the production of special forms of objects).
16. Glass pressing in general. (Cf. gr. 17, 18, 22.)
17. Pressing glass to produce special forms of objects. (Cf. gr. 18 and 22.)
18. Pressing and otherwise forming tiles and glass letters, not including stamping. (Cf. gr. 23.)
19. Rolling plate glass from the molten glass without special designs (also pressing molten glass through shaping apertures). (Cf. gr. 24.)
20. Rolling plate glass with special designs, and rolling articles other than of tabular form from molten glass, exclusive of gr. 18 and gr. 22.
21. Auxiliary apparatus for glass rolling, e. g., plate supports (Cf. 81e, 34), pot tongs, and other apparatus for moving pots. (Cf. 35b, 1.)

## 32a—Continued.

22. Rolling and other forming of wire glass or asbestos glass from molten glass; also rolling plate glass with the application or insertion of granular materials.
23. Stamping softened glass (perforating apparatus, apparatus for forming fluted edges). (Cf. gr. 27.)
24. First treatment of glass from the fused condition in other ways than those mentioned in groups 7 to 23, e. g., by centrifugal action, by shaking, by allowing the glass to flow through shaping apertures, by drawing, pulling out, or allowing the glass to sink down. (Cf. gr. 19.)

## SUBSEQUENT TREATMENT OF GLASS ARTICLES UNDER THE INFLUENCE OF HEAT. (Gr. 25-27.)

25. Glass-molding tongs with exterior or interior movable forms for molding bottle mouths.
26. Glass-molding tongs with both interior and exterior movable forms for molding bottle mouths.
27. Other treatment of glass articles not mentioned in groups 25 and 26, e. g., spreading, folding, manipulation of complete plates, bars, and tubes by means of lamps, processes for spreading out plate-glass cylinders, making of glass wool. (Cf. gr. 31.)

## TREATMENT OF GLASS ARTICLES SUBSEQUENT TO FORMING PROCESSES. (Gr. 28-34.)

28. Cooling glass articles in general, e. g., in separate independent compartments.
29. Continuous cooling of glass articles in conduits or in a series of movable compartments, also cooling conduits in spreading furnaces. (Cf. gr. 31, 32.)
30. Sudden cooling of glass articles for the purpose of hardening.
31. Reheating glass objects until softened in general, e. g., opening furnaces, drum furnaces, re-fusing apparatus, muffle furnaces, ordinary spreading furnaces, including those with cooling conduits. (Cf. gr. 29, 32.)
32. Reheating glass objects until soft, in continuous operation with forward movement of the objects, e. g., muffle furnaces, spreading furnaces with mechanical conveyance of the articles.
33. Spreading out and cutting glass objects. (Cutting glass tubes into beads, gr. 37.)
34. Mechanical insertion of glass articles into the annealing furnace.

35. Making and forming of quartz glass and quartz materials. (Cf. 80b, 8.)

- 32b. Chemical Compounding, e. g., Frits, Fluxes, Coloring, Decoloring. Also Ornamentation of Glass by Changing the Nature of the Surface, as Stained Glass, Etching, Sand-Blast Working (sand-blast blowers, class 67), Glass Painting (also class 75d), Coating with Metal, Mirror Making (by galvanic action, class 48a), Art Glazing. (Surface ornamentation, class 75.)

## GLASS COMPOUNDING. (Gr. 1-4.)

1. Compounding colorless glass (also layer glass, devitrified glass).
2. Compounding of glass which is uniformly colored, decolored, or clouded, in the fused condition.

## 32b—Continued.

3. Compounding of glass which is not uniformly colored, decolored, or clouded in the fused condition (marbled or veined glass and the like).
4. Compounding of glass for production of annealing colors, and with surface colors, e. g., ruby, azure, luster.

## ORNAMENTATION OF GLASS BY PRODUCING SPECIAL SURFACE MODIFICATIONS. (Gr. 5-7.)

5. Ornamentation of glass by producing special surface modifications in the plastic state (e. g., stained glass, crackled glass). (Cf. 32a, 20.)
6. Ornamentation of glass by etching.
7. Ornamentation of glass by mechanical treatment of the surface, e. g., sand-blast working, damaskeening. (Sand-blast blowers, 67b.)

## ORNAMENTING GLASS BY COATING WITH VITRIFIED MATERIALS OR METAL, AND THE MANUFACTURE OF DECORATED TILES. (Gr. 8-10.)

8. Ornamentation of glass with enamel, e. g., glass painting with enamel.
9. Ornamentation of glass by coating or overlaying with softened glass (exclusive of mosaic overlaying), e. g., flashing, spinning, making mosaic pieces and decorated tiles, exclusive of molding in plastic condition. (Cf. 32a, 18.)
10. Ornamentation of glass by coating with metal, including mirror making, uniting metal and glass by fusion (cf. 32a, 22), lining metal receptacles, e. g., tubes lined with glass, application of gold leaf and the like. (Cf. 48b, 2.)

11. Ornamentation by assembling glass pieces in frames for windows and the like. (Art glazing, including that in which the frames are formed by casting metal in the joints between adjacent pieces of glass.) (Imitation of art glazing, 75d.)

## CLASS 33.—HAND AND TRAVELING ARTICLES.

## 33a. Umbrellas, Canes, Cane and Umbrella Stools, Fans.

## UMBRELLAS. (Gr. 1-10.)

1. Umbrella frames. (Cf. gr. 5-7.)
2. Umbrella runners, fastening devices, and crowns for the same. (Cf. gr. 3, 5, 6, 9, 10.)
3. Umbrella fasteners. (Cf. gr. and gr. 6.)
4. Umbrella covers and means for fastening same. (Cf. gr. 1, 2, 7, 9, 10.)
5. Devices for opening and closing umbrellas, not including automatic openers. (Cf. gr. 6.)
6. Umbrella frames with special spring mechanism (automatic openers and closers). (Cf. gr. 5.)
7. Miscellaneous devices for umbrellas (cf. gr. 13), also umbrella cases. (Cf. gr. 10.)
8. Umbrellas of special form (angle umbrellas, and the like). (Cf. gr. 6, 9, 10.)
9. Folding umbrellas. (Cf. gr. 10.)
10. Umbrella canes. (Cf. gr. 9.)

## CANES. (Gr. 11-13.)

11. Canes in general (form and structure of the stick, head, and tip). (Cf. gr. 1, 13, 14.)
12. Canes combined with smoking implements.
13. Canes with miscellaneous devices, exclusive of gr. 12, including walking-stick hangers, etc. (Cf. gr. 7 and 33d, 11.)



## 33a—Continued.

14. Cane and umbrella stools. (Cf. 34g, 7.)
15. Fans. (Cf. 36d, 6.)

## 33b. Purses (also class 43a), Traveling Bags, Trunks, and Traveling Baskets.

## PURSES AND TRAVELING BAGS. (Gr. 1-4.)

1. Purses (cf. gr. 3, 4, 11-13), billbooks, and pocket-books. (Cf. 11e, 12.)
2. Traveling bags, including document, foot, belt, hand, hunting, marketing, and school bags, traveling cases (cf. 33d, 8), shawl covers and the like; also interior fittings for traveling bags. (Cf. 3-7, 8, 11-13.)
3. Bow structures for purses, traveling bags and the like. (Cf. gr. 4.)
4. Bow fastenings for bag of all kinds. (Cf. gr. 1, 11, 12; 81c, 8, 9.)

## TRUNKS AND TRAVELING BASKETS. (Gr. 5, 6.) (Cf. gr. 11-13.)

5. Wall materials and plates for trunks and means for connecting them. (Cf. 38d, 2; 81c, 2.)
6. Trunks and traveling baskets, also interior trunk fittings. (Cf. gr. 9; 81c.)

## TRAVELING RECEPTACLES WITH SPECIAL ARRANGEMENTS FOR VARIOUS PURPOSES. (Gr. 7-9.)

7. Expandible and collapsible bags, trunks, baskets, and the like. (Cf. gr. 9; 81c, 14.)
8. Bags, trunks, and traveling baskets which may be converted into objects suitable for other uses. (Cf. 33d, 7.)
9. Hatboxes. (Cf. gr. 7, 10.)

10. Miscellaneous receptacles, e. g., catch-alls, postmen's cases, food boxes and cases, companions, cases for spectacles, jewel boxes, and the like. (Cf. gr. 9; 33c, 12; 34f, 15-17; 44b, 18; 54a; 54g; 77f, 31; 81c, 12, 15.)

## FITTINGS FOR BAGS, TRUNKS, AND TRAVELING BASKETS. (Gr. 11-13.)

11. Fasteners and locks for hand and traveling bags, trunks and baskets. (Cf. gr. 4, 6-10, 12; 3c, 4; 68a, b, 81c, 3.)
12. Safety fasteners, e. g., secret locks, (cf. 68a, 31, 87) and safety devices to prevent theft and loss of bags of all kinds, trunks, and baskets. (Safety devices to prevent theft of watches, etc., 44a, 41.)
13. Miscellaneous accessories for bags, trunks, and baskets, exclusive of gr. 3, 4, 11 and 12; 81c, 2.

## 33c. Toilet Accessories, including Curling Irons and Lamps, Hair Crimpers, Hair Supports, (hairpins, class 44a), Hairdressers' Appliances (barbers' and hairdressers' chairs, class 34g), Combs of all Kinds, Mustache Holders, Shoe and Glove Buttoners, Nail Trimmers and Files and the Like.

## DEVICES FOR TRAINING AND HOLDING THE HAIR AND BEARD. (Gr. 1-5.)

1. Hair curlers designed to be heated (curling irons, tongs, combs, and the like).
2. Apparatus for heating and testing curling tongs and the like (hair-curler lamps).
3. Hair crimpers, curlers, winders, waving devices, etc.
4. Hair-holding devices, including combs.
5. Beard trainers, binders and presses (cf. gr. 1), also beard shields.

## 33c—Continued.

## DEVICES FOR CLEANING AND MANIPULATING THE HAIR AND SCALP. (Gr. 6-8.)

6. Hair washing and drying apparatus. (Cf. gr. 1 and 7.)
7. Combs for treating the hair and scalp and for parting and dyeing the hair.
8. Cleaning of combs and brushes. (Cf. 34c).

9. Miscellaneous barbers' and hairdressers' implements, e. g., lather makers (shaving brushes, class 9), razor cleaners, barbers' aprons, and the like. (Cf. 30i, 6; 69, 20 and 21.)
10. Shoe, glove, and collar buttoners.
11. Nail trimmers, cleaners, and polishers; nail files.
12. Miscellaneous toilet articles, e. g., toilet cases, powder boxes and puffs, perfume boxes, bottles and cases, sachet bags, receptacles for tooth powder, etc., dusters for talcum, ear spoons, hand and pocket mirrors, etc. (Cf. 33b, 10; soap receptacles 34k, 2.)

## 33d. Camp Equipage and Traveling Equipment, e. g., Tents, Haversacks, Including Those for School Use, Knapsacks, Canteens, Hammocks, Seats and Supports for Travelers in Vehicles, Holders and Article Carriers, Flower and Ticket Holders, Umbrella, Cane, and Fan Carriers, Parcel and Book Carriers, and the Like. (Cartridge bags, class 72d, cleaning implements, class 34c.)

## ARTICLES OF TRAVELING AND CAMP EQUIPMENT. (Gr. 1-8.)

1. Tents, ordinary. (Cf. tents in the nature of knock-down and portable buildings, 37f, 4.) (Cf. gr. 5.)
2. Haversacks, knapsacks. (Cf. 3b, 3; 33b, 2, 6, and 10; 33d, 7; fasteners, 33b, 11, 12.)
3. Haversack holders (cf. gr. 12), haversack supports and pads.
4. Canteens and cups. (Cf. 64a, 3.)
5. Hammocks and hanging seats. (Cf. gr. 1 and 6.)
6. Seats, cushions, and supports for parts of the body to be used by travelers in vehicles. (Cf. gr. 5; 20c, 41 and 45; 34g, 7; 63b, 2; 63c, 22.)
7. Articles of camp and traveling equipment which may be converted into articles for other uses, e. g., coat tents, haversack tents, etc. (Cf. 33b, 8.)
8. Miscellaneous articles for camp and traveling equipment, e. g., travelers' table utensils, (cf. 34f, 11 to 14), markers for tourists' belongings, fastenings for belts for carrying weapons. (Cf. 56b), etc.

## ARTICLE HOLDERS AND CARRIERS. (Gr. 9-13.) (Holders and carriers for house use, 34e-1.)

9. Flower holders. (Cf. 44a.)
10. Ticket and card holders. (Cf. 44a.)
11. Umbrella, cane, and fan carriers. (Cf. 33a, 13.)
12. Baggage and book carriers (belts, straps). (Cf. gr. 2.)
13. Holders and carriers for various articles, exclusive of gr. 9-12.

## CLASS 34.—HOUSEHOLD MACHINES, IMPLEMENTS, AND ARTICLES OF ALL KINDS, INCLUDING FURNITURE. (Laundry, Class 8d.)

## 34a. Cooking Apparatus For the Use of Petroleum, Gas, Alcohol, and the Like. (Burners, class 4g.)

1. Petroleum cookers.
2. Gas cookers.

## 34a—Continued.

3. Alcohol cookers, and the like.
4. Lamp cookers.
5. Miscellaneous features in connection with cookers for the use of petroleum, gas, alcohol, and the like.

**34b. Machines and Utensils for Grinding and Cutting Food; also Fruit Seeders and Devices for Peeling and Cutting Vegetables and Fruit, for the Manipulation of Single Fruits Only.** (Treatment in bulk, class 45e; meat cutting, class 66b.)

1. Household machines and implements for cutting sausage, meat, bacon, etc. (Cf. gr. 6; slicing machines, 66b, 9.)
2. Bread-cutting machines. (Cf. gr. 6.)
3. Vegetable and fruit cutting machines. (Cf. gr. 6.)
4. Machines and implements for cutting cheese and the like.
5. Household machines and implements for cutting up ice, sugar, and the like. (Cf. 17b, 4.)
6. Machines and implements for cutting various foods (bread, meat, vegetables, etc.). (Cf. gr. 1-3.)
7. Peeling machines and implements for household use. (Peeling machines for vegetables or fruit in bulk, 44e, 44, 45.)
8. Grating machines and implements.
9. Machines and implements for compressing vegetables and fruits.
10. Nut crackers.
11. Devices for removing seeds and stones from fruits.
12. Devices for stemming fruits, etc. (Cf. 45e, 46.)
13. Miscellaneous machines and utensils for grinding and cutting food.

**34c. Machines and Implements for Cleaning Dwellings, Furniture, Household Utensils, Clothing, etc.** (Carpet-cleaning machines and the cleaning of furniture and the like by suction and compressed air, class 8e; cleaning beer glasses, class 64b.)

**WINDOW CLEANING.** (Gr. 1-4.)

1. Window-cleaning machines.
2. Window-cleaning hand implements.
3. Devices for preventing deposition of moisture, frost, etc., on window panes. (Cf. 37d, 16.)
4. Safety apparatus for use in window cleaning. (Cf. 34e, 16; 34l, 23.)

**CLEANING FLOORS AND WALLS.** (Gr. 5-7.) (Brushes and handle fastenings, class 9, 10, and 19.)

5. Cleaning, brushing, and polishing machines for room floors. (Cf. gr. 8.)
6. Scrubbing and polishing implements, mops, mop pails, and dust pans.
7. Dust brushes and dust cloths.

**CLEANING OF HOUSE FURNISHINGS.** (Gr. 8, 9.)

8. Carpet-cleaning machines (floor-sweeping machines, group 5), carpet brooms and brushes.
9. Upholstery beaters.

**CLEANING HOUSEHOLD UTENSILS.** (Gr. 10-12.)

10. Washing, rinsing, and drying apparatus for table utensils.
11. Knife, fork, and spoon cleaners.
12. Lamp-chimney cleaners.

## 34c—Continued.

**CLEANING CLOTHING AND SHOES.** (Gr. 13-18.)

13. Implements for cleaning clothing, buttons, clasps, etc.
14. Shoe-polishing machines.
15. Shoe-polishing hand implements. (Brushes, class 9, 9, 17.)
16. Devices for holding shoes while being cleaned, shoe dryers. (Cf. 71c, 7.)
17. Shoe scrapers and cleaners. (Door mats 34f, 24.)
18. Devices for applying shoe polish, holders for shoe polishing implements, and shoe polish. (Cf. 81c, 15; brushes, class 9, 9, 17.)

**34d. Implements for Use in Connection with Heating and Cooking Stoves.**

**IMPLEMENTS FOR HANDLING FUEL.** (Gr. 1-3.)

1. Implements for cutting wood or breaking coal, for heating or cooking stoves, etc.
2. Coal hods
3. Shovels, tongs, and similar implements for heating or cooking stoves, etc.

**IMPLEMENTS FOR HANDLING ASHES** (Gr. 4-6.)

4. Ash receptacles.
5. Ash sifters.
6. Fenders.

7. Devices for lighting (cf. 10b, 15), and for kindling and maintaining kitchen fires. (Cf. 24k, 6.)
8. Miscellaneous implements for use in connection with chamber and kitchen fires.

**34e. Window and Door Equipment and Curtains, also Wall Dowels.** (Weather strips, class 37d; hardware, class 68c.)

**CURTAIN RODS AND APPURTENANCES.** (Gr. 1-3.) (Cf. gr. 12-15.)

1. Curtain rods, fixed and extensible.
2. Bearings for curtain rods.
3. Holders and hooks for curtain rods.

**FASTENING, CLAMPING, AND GUIDING DEVICES FOR THE BANDS AND CORDS OF CURTAINS, DRAPERIES, AND THE LIKE.** (Gr. 4-9.) (Roller blinds, 37d, 28.)

4. Automatic cord clamps for curtains.
5. Nonautomatic cord clamps for curtains.
6. Cord tensioning devices for curtains with two cords.
7. Automatic fastening, locking, and braking apparatus for roller curtains.
8. Nonautomatic fastening, braking, and locking devices for roller curtains.
9. Band holders, band rollers, and tensioning devices for roller curtains.

**DEVICES FOR DRAWING DRAPERIES, CURTAINS, ETC.** (Gr. 10, 11.)

10. Devices for opening and closing curtains in connection with windows and doors.
11. Apparatus for letting down curtains and the like.

12. Fastening curtains on curtain rods.
13. Fastening roller curtains on rollers.
14. Curtain-holding rosettes.



## 34c—Continued.

15. Curtain shields.
16. Window gratings for protection against falling from windows, especially for children (safety devices for use in connection with window cleaning, 34c, 4; wire screens for windows, 37d, 14).
17. Door lifters.
18. Wall dowels of metal, etc. (Cf. 37b, 5.)
19. Miscellaneous window and door equipment, including curtains, draperies, and roller shades. (Cf. 37a, 18-23.)

## 34f. Chamber, Table, and Dwelling Equipment. (Furniture 34 g, h, and i.)

## CHAMBER EQUIPMENT. (Gr. 1-10.)

1. Mirrors, including window mirrors.
2. Picture frames (those made of folded paper, 54f).
3. Picture and mirror hanging devices, including those with suction caps, removable ornamental heads for nails. (Suction-cap fasteners for use in show windows, 54g, 22.)
4. Photograph stands (those made from folded paper, 54f).
5. Screens (fire screens, roller screens, inside blinds for windows).
6. Stands for flowers and the like.
7. Carpet holders.
8. Carpet stretchers.
9. Pillows, bed covers, counterpanes, bed linen, button bands, table covers, and table linen. (Cf. 3b, 3.)
10. Spittoons in general. (For dental use, 30b, 20; for railway cars, 20c, 42; spittoon flasks, 30g, 14.)

## TABLE EQUIPMENT. (Gr. 11-21.) (Table knives, class 69.)

11. Tableware, e. g., plates.
12. Food lifters, openers for oysters and other shellfish.
13. Forks.
14. Spoons. (Manufacture, 7c, 41.)
15. Mustard holders.
16. Pepper boxes and salt cellars.
17. Toothpick holders.
18. Egg cups and egg openers.
19. Napkin and tablecloth holders.
20. Butter dishes and cheese covers.
21. Miscellaneous table utensils, exclusive of gr. 11 to 20, e. g., glass carriers, knife rests, holders for table utensils.

## DWELLING EQUIPMENT, EXCLUSIVE OF CHAMBER AND TABLE EQUIPMENT. (Gr. 22-26.)

22. Dress holders and hooks and fixed devices for assisting in putting on clothing. (Cf. 34l, 24 and 30; 68a, 108.) Clothing lifters.
23. Cane and umbrella stands and holders.
24. Carpets, stair runners, bedside rugs, and foot mats.
25. Stair rods and stair-rod fasteners.
26. Miscellaneous articles of dwelling equipment. (Cf. 34l, 22.)

- 34g. Chairs, Beds and the Like, Including Traveling and Camp Stools and Beds, Benches and Hairdressers' Chairs, Arm, Leg, and Head Rests for Chairs and Beds and Independent Railway Car Seats, Not Including Arrangements for Protection in Case of Collisions. (Children's chairs under h; umbrella and cane stools, 33a; chairs with coin-controlled mechanism, 43b.) Bed Steads and Mattresses (berths for ships, 65a; sleeping-car berths, 20c; bedstead fittings under i). Convertible Beds, Sofas, Wardrobe Beds, Chair Beds, Trunk Beds, Etc., Nets for Protec-

## 34g—Continued.

tion Against Insects, and Fasteners for Bed Clothes.

## CHAIRS AND THE LIKE AND APPURTENANCES. (Gr. 1-10.)

1. Reclining chairs and hairdressers' chairs, also headrests and paper holders for barbers' use. (Cf. gr. 9.)
2. Rocking-chairs.
3. Counter stools and wall stools.
4. Piano stools and other stools with vertically adjustable seats.
5. Theater chairs, also hat and coat holders for chairs.
6. Folding chairs (traveling and camp stools), covered chairs for use at the seashore.
7. Chairs with means for protection against the rain. (Cf. 33a, 14.) Also independent railway-car seats without devices for protection in case of collisions. (Cf. 20c, 41; 33d, 6.)
8. Structural elements of chairs.
9. Attachments for chairs (supports for the head, back, arms, legs, or feet). (Cf. gr. 1, 5, 12, 17.)
10. Miscellaneous chairs, etc., exclusive of gr. 1-6 (prayer stools, confessionals, benches, stools, and footstools).

## BEDS, SOFAS, AND THE LIKE. (Gr. 11-20.) (Convertible beds, gr. 12-15.)

11. Bedsteads.
12. Sofas, bed sofas, settees.
13. Wardrobe beds.
14. Chair beds, table beds, bath-tub beds, etc.
15. Folding bedsteads (traveling beds, trunk beds, camp beds).
16. Attachments for beds (sheet holders, bed-cover holders, ventilators, and other attachments, not including bed tables, 34i, 3). (Cf. 34h, 2.)
17. Spring mattresses (compression spring, bar, and woven mattresses, etc.), back supports. (Cf. gr. 9, 18; 30e, 7.)
18. Springs for mattresses and means for fastening same. (Manufacture of springs, 7d, 7.)
19. Pneumatic mattresses, stuffed mattresses including straw mattresses, and cellular mattresses. (Cf. gr. 17; 30e, 7.)
20. Nets for protection against insects, and bed canopies. (Cf. 45k, 5.)
21. Miscellaneous features in connection with chairs, beds, etc., exclusive of groups 1 to 20, e. g., upholstery fasteners, and mattress protectors.

## 34h. Children's Furniture, Devices for Carrying Children. (Perambulators, 63b.)

1. Children's chairs, including roller chairs.
2. Children's beds and tables, and appurtenances (as in 34g, 16). (Cf. 63b, 52.)
3. Cradles (including automatic rockers).
4. Children's rocking chairs.
5. Baby carriers and leading strings.

## 34i. Tables and Cupboards, Including Game Tables, Writing Tables, Drawing Tables, Traveling and Desk Tables, Reading Desks, School Benches, Blackboards (writing surfaces, 70e), Map Holders and Easels, Commodes and Convertible Furniture (exclusive of that mentioned under g), Casters, Fittings and Structural Parts for Furniture, and Furniture Connections in General, Table and Cupboard Connections. (Locks, class 68a; bolts, 68b; and hinges, 68c.)

## TABLES, DESKS, BLACKBOARDS, ETC. (Gr. 1-9.)

1. Dining tables (extension tables, leaf tables, etc.).
2. Game tables. (Games, 77d.)

## 34i—Continued.

3. Bedside tables, invalid tables. (Cf. gr. 17; operating tables, 30e, 14.)
4. Writing tables, wall tables (also typewriter tables and covers).
5. Folding and collapsible tables, traveling and trunk tables. (Cf. 33b, 8; 33d, 7.)
6. Drawing tables (drawing boards, drawing apparatus, and adjustable pads for drawing, 70e).
7. Miscellaneous tables, as suspension tables, kitchen tables, sewing tables, convertible tables exclusive of gr. 1 to 8, underframes for tables. (Kitchen cabinets, gr. 22; convertible furniture, gr. 29.)
8. Desks, including writing desks, reading desks, and book desks. (Cf. gr. 17; 15a; 15i, 3; 51e, 7.)
9. Stands for blackboards, map holders, easels. (For slates and blackboards, cf. 70e, 1 and 2.)

## SCHOOL BENCHES. (Gr. 10-13.)

10. General structure of school benches, including means for shifting same and the arrangement of a plurality of benches.
11. Desk tops for school benches.
12. Seats and backs for school benches.
13. Miscellaneous features in connection with school benches, exclusive of gr. 10 to 12.

## CUPBOARDS AND THE LIKE. (Gr. 14-22.)

14. Wardrobes.
15. Open stands and cases for books, weapons, etc. (Cf. 51e, 8.) Also shelf supports and devices for shifting and fastening shelves.
16. Inclosed cupboards and compartment cases for books, documents, and drawings, storage cases for formulas, and the like (exclusive of gr. 14, 18, 19.)
17. Bookholders for bookcases, reading stands, and the like. (Cf. gr. 3, 8.)
18. Commodes, linen presses, and dressers.
19. Separable, collapsible, and knockdown cupboards and shelves; wardrobe trunks. (Cf. gr. 5.)
20. Drawers and guides for the same.
21. Furniture fastenings, closures for parts of cupboards, locking chests, and the like. (Cf. 68a, b, and c.)
22. Miscellaneous cupboards (cf. 34 k, 1) and stands, including cupboards or tables combined with closet arrangements, general structure (cf. 34k, 1, 10). Convertible cupboards and kitchen cabinets.

## CASTERS AND OTHER FURNITURE FITTINGS, ALSO STRUCTURAL ELEMENTS FOR FURNITURE. (Gr. 23-29.)

23. Casters, general structure.
24. Ball casters.
25. Adjustable casters and feet for furniture, also casters which may be shifted in or out, and devices for protecting floors.
26. Fittings for connecting parts of bedsteads.
27. Joining parts of furniture by fittings, bolts, clasps, and the like (table and cupboard joints, also structural parts for furniture).
28. Exterior fittings for furniture, e. g., handles and ornaments for tables, chairs, and cupboards.
29. Miscellaneous furniture and furniture parts, exclusive of gr. 1-28, convertible furniture for various uses. (Cf. gr. 6 and 19.)

**34k. Apparatus and Implements for Bathing, etc.** (see also class 30f and 85f), also Closets (water-closets, class 85h), and Dispensers for Toilet and Closet Accessories.

## APPARATUS AND IMPLEMENTS FOR BATHING (Gr. 1-5). (Cf. 30f, 85f.)

1. Toilet tables, wash cupboards, closet cupboards or stands with arrangements for washing, etc. (Cf. 34i, 22.) (For railway cars, 20c, 42; for ships 65a, 11.)
2. Soap dispensers and receptacles.
3. Towel and sponge holders, including those with drying devices for the towel or sponge.
4. Bathtubs. (Bathtubs with heating devices, 36c, 6.)
5. Shower baths, and needle baths, or douches.

## CLOSETS AND APPURTENANCES, EXCEPTING WATER-CLOSETS. (Gr. 6-10.) (Water-closets, 85h; cess-pools, 37f, 6; 85e, 5.)

6. Closets, including seats, covers, and the like. (Closets for railway cars, 20c, 42; for ships, 65a, 11.) (Cf. gr. 7.)
7. Dust closets (e. g., room closets). (Cf. 6, 10.)
8. Protecting and cleaning devices for closet seats and the like.
9. Closet paper and paper holders. (Cf. 70c, 18.)
10. Chambers, cisterns for room closets, cupboards or stands with closet arrangements. (Cf. 34i, 22.) (Cf. gr. 6, 7.)

## 11. Miscellaneous, exclusive of gr. 1-10.

**34l. Kitchen and Other Household Implements, Exclusive of Those Mentioned in a to f and k. Miscellaneous Articles for Personal Use, e. g., Devices for Putting on Boots and Shoes, Shoe Horns and the Like, Also Articles for Special Uses, e. g., Clothing Hangers and Stretchers (excepting clothing hooks, class 34f; and those with locking devices, 68a), Also Indoor Fountains, and Christmas Tree Decorating and Lighting, Merchandise Receptacles, Provided They do not Serve for Advertising (class 54g), or are not Combined with Special Measuring Apparatus (class 42e), Letter and Food Boxes for House Use (street letter boxes, class 81c), Ladders for House Use, Bottle Carriers (bottle cases, class 81c), Devices for Preventing Explosion of Receptacles, and Emptying Devices for House Use (for warehouse containers, class 81e).**

## COOKING UTENSILS AND HEATING APPARATUS FOR KITCHEN USE. (Gr. 1-9.) (Cf. gr. 13; 12a.)

1. Miscellaneous cooking receptacles for kitchen use, also camp cooking utensils. (Cf. gr. 2-4; 12a; 36a, 22.)
2. Steam cookers, digesters. (Cf. gr. 1, 3, 4; 12a.)
3. Cooking utensils with water baths for kitchen use. (Cf. gr. 1, 2, 4; 12a.)
4. Cooking utensils with sieves inserted therein, e. g., potato cookers. (Cf. gr. 1-3.)
5. Milk cookers and devices for preventing overheating.
6. Cookers for eggs, time-controlled cookers.
7. Coffee and tea pots and devices for preparation of extracts.
8. Cooking apparatus with time-controlled lighting mechanism and with alarms. (Cf. 83a, 72.)



## 34I--Continued.

9. Devices for heating by means of burners, including traveling and camp cookers, or by chemical reactions, heating devices employing latent heat of fusion. (Purely chemical processes, 12g, 1.)

## MISCELLANEOUS KITCHEN UTENSILS. (Gr. 10-21.)

10. Baking and roasting apparatus.
11. Devices for retaining heat (fireless cookers). (Cf. 42i, 12; 42i, 13; 82a, 5.)
12. Miscellaneous kitchen stands.
13. Lids and lid fasteners. (Cf. 64a.)
14. Pot lifters, holders, tongs, handles, and grips.
15. Devices for preparing fish.
16. Larding devices.
17. Devices for preparing fowls.
18. Kitchen sifters.
19. Stirring devices, egg beaters.
20. Petroleum and alcohol cans, including those with safety devices to prevent explosions. (Cf. 64c, 44; 81e, 38.)
21. Miscellaneous kitchen utensils, exclusive of gr. 10 to 20, and stove equipment. (Cf. 34d.)

## MISCELLANEOUS HOUSEHOLD IMPLEMENTS. (Gr. 22-26.)

22. Miscellaneous household implements. (Cf. 34f, 26.)
23. Ladders for house use, chair ladders.
24. Devices for putting on or removing boots or shoes, including bootjacks, shoehorns, and the like, shoe benches for putting on and lacing up shoes, trouser pullers, devices for house use for assisting in putting on clothing. (Cf. 34f, 22.)
25. Letter boxes for house use, deposit receptacles for foods (street letter boxes, 81c, 28-30); also similar receptacles to prevent unauthorized removal of articles.
26. Table fountains, etc. (Cf. 85g, 1.)

## CHRISTMAS-TREE DECORATION AND LIGHTING. (Gr. 27-29.)

27. Christmas trees, Christmas-tree decorations.
28. Christmas-tree stands.
29. Candle holders for Christmas trees.

## CLOTHING HANGERS AND STRETCHERS. (Gr. 30-32.)

30. Clothing hangers (bows). (Cf. 34f, 22.)
31. Trouser stretchers.
32. Clothing presses, neckwear presses.

## STORE FURNITURE. (Gr. 33-35.) (Paper holders, etc., 34k, 9; 70c, 18.)

33. Twine holders.
34. Merchandise containers for store use (for advertising purposes, 54g; with special measuring devices, 42e). (Cf. 64a, 7.)
35. Counters.

**CLASS 35.—HOISTING.** (Hoisting mechanism for railway tracks, 19a, 28; for earth, 84d; for hay, 45c, 30; ship hoisting mechanism, 84b.)

## 35a. Elevators.

## ELEVATORS AND ELEVATOR HOISTING MECHANISM IN GENERAL. (Gr. 1-11.)

1. Elevators in general.
2. Hydraulic elevators.
3. Electric elevators.
4. Builders' elevators.

## 35a--Continued.

5. House mail elevators. (Cf. 81e, 46.)
6. Escalators.
7. Elevators of the endless conveyer type. (Cf. 81e, 6-12.)
8. Endless-chain elevators for parcels. (Cf. 81e, 13.)
9. Elevators for mine hoisting.
10. Vertical hoisting with balanced cars and a rope driving sheave. (Koepe elevators.)
11. Hoisting-cage structures. (Cf. 5d, 4.)

## CATCH DEVICES FOR ELEVATORS. (Gr. 12-16.)

12. Eccentric catch devices.
13. Wedge catch devices.
14. Catch devices with spring-actuated bolts.
15. Catch devices with cutting edges or points.
16. Miscellaneous catch devices not included in gr. 12 to 15.

## SAFETY DEVICES FOR ELEVATORS, EXCLUSIVE OF CATCH DEVICES. (Gr. 17-25.)

17. Elevator cushions.
18. Shaft closures. (Cf. 5d, 6.)
19. Chairs.
20. Landing control devices. [Floor stops.]
21. Signals.
22. Safety devices for hoisting mechanism.
23. Devices for preventing overwinding.
24. Depth indicators.
25. Electric switches, switch apparatus, and connections for elevators.

## 35b. Cranes.

1. Traveling cranes in general, including bridge cranes, launching cranes, casting cranes (cf. 31c, 27; 32a, 21), builders' cranes, elevated carrier systems with hoisting apparatus.
2. Temperley cranes (cranes with a single hoist cable).
3. Charging cranes. (Cf. 18b, 25.)
4. Rotary cranes in general, including floating cranes, launching cranes, builders' cranes.
5. Mast cranes with swinging jib.
6. Hydraulic rotary cranes.
7. Grapples, tongs, and load hooks for cranes, including automatic grapples, magnetic grappling devices, and control mechanism for the same. (Cf. 21g, 2.)
8. Electric control mechanism and connections for cranes.

## 35c. Windlasses and Block and Tackle. (Coffin hoists, 30e, 18; capstans, 65a, 25; rack-and-pinion and screw jacks, 35d, 3 and 4.)

1. Winding drums.
2. Block and tackle.
3. Ratchet and brake mechanism in general for windlasses, pulley blocks, and the like, including brake devices controlled electrically or by a pressure medium (water, air, etc.).
4. Safety cranks for windlasses, pulley blocks, etc.
5. Ratchet brake drums for windlasses, pulley blocks, etc.
6. Centrifugal brakes for windlasses, pulley blocks, etc.
7. Axial thrust brakes for windlasses, pulley blocks, etc.

## 35d. Hoisting Apparatus, Including Skids, Jacks, Sack Lifters, Unloading Tools, and Hydraulic or Pneumatic Hoists. (Pneumatic conveyers, class 51e.)

1. Skids and sack lifters.
2. Lever jacks.

## 35d—Continued.

3. Rack-and-pinion jacks.
4. Screw jacks.
5. Lifting jacks including lifting plungers.
6. Hoisting mechanism comprising lazy tongs. (Cf. 37e, 6; 61a, 3.)
7. Hydraulic hoisting apparatus.
8. Compressed air hoisting apparatus.
9. Miscellaneous hoisting apparatus, exclusive of gr. 1 to 8, e. g., for erecting telegraph poles, etc

**CLASS 36.—HEATING AND VENTILATING PLANTS IN BUILDINGS.****36a. Stoves and Ranges for Solid Fuels, also Stoves for Lignite Coke.** (Firing arrangements in general, class 24a.)**STOVES FOR SOLID FUELS.** (Gr. 1-12.)

1. Magazine stoves. (Cf. 24a, 12.)
2. Air circulating stoves.
3. Ventilating stoves [fresh air].
4. Briquet stoves.
5. Regulating devices for heating stoves of all kinds, including draft-changing mechanism. (Cf. 24i.)
6. Dampers and slides for heating stoves. (Cf. gr. 14.)
7. Devices for removing soot and ashes from heating stoves. (Cf. 24g, 5.)
8. Heat-storing devices for heating stoves. (Cf. 24c, 5; 36b, 4.)
9. Stoves with movable parts (collapsible stoves).
10. Grates and fireplaces.
11. Firing arrangements in which the flame is directed downward.
12. Special arrangements for directing the air and gases in zigzag or spiral paths, and the like, for heating stoves.

**STRUCTURAL ELEMENTS OF HEATING STOVES.** (Gr. 13-15.)

13. Single stove parts (tiles, etc.; grates 24f.)
14. Stove pipes (means for fastening, mechanism in connection with stove pipes, and means for utilizing the flue gases). (Cf. gr. 6; 24g.)
15. Stove doors.

**COOKING STOVES AND RANGES FOR SOLID FUELS.** (Gr. 16-23.)

16. Ranges in general. (Cf. 24a, 12.)
17. Cooking ranges adapted for both heating and cooking purposes.
18. Ranges, also heating stoves, with arrangements for heating water, and those with means for circulating hot air. (Cf. 24a, 10.)
19. Ranges provided with devices for removing hot vapors. (Cf. 36d, 3.)
20. Cooking furnaces.
21. Stoves adapted for the use of lignite coke.
22. Camp cooking ranges. (Cf. 34l, 1.)
23. Range plates, stove rings or inserts, and other range parts.

**24. Miscellaneous heating stoves.****36b. Stoves and Ranges for Gases and Liquid Fuels, Including Those Adapted for Simultaneous Use of Different Fuels.****GAS HEATING STOVES FOR GASEOUS AND LIQUID FUELS.** (Gr. 1-4.)

1. Gas heating stoves, including so-called "Schnell-heizer."

## 36b—Continued.

2. Appurtenances of gas heating stoves (gas cocks, regulating devices, and the like).
3. Heating stoves for liquid fuels.
4. Heat-storing devices for gas heating stoves. (Cf. 24c, 5; 36a, 8.)

**RANGES FOR GASEOUS FUELS.** (Gr. 5, 6.)

5. Gas ranges. (Cf. 34a, 2; 34l, 10.)
6. Ranges with different firing arrangements (for both gas and solid fuel).

**36c. Central Heating Systems, Steam Cooking Ranges.** (Steam cooking utensils, class 34l; steam traps, class 13d; valve structure, class 47g.)**STEAM HEATING PLANTS, INCLUDING HIGH PRESSURE, LOW PRESSURE, AND VACUUM SYSTEMS.** (Gr. 1 and 2.) (Steam heating for railway cars, 20c, 22.)

1. Steam heating plants in general.
2. Arrangements for removing air and drawing off water for steam heating plants. (Cf. 13d, 12-25.)

**WARM AND HOT WATER HEATING PLANTS, INCLUDING STEAM WATER AND STEAM WARM WATER HEATING SYSTEMS.** (Gr. 3-5.)

3. Warm-water heating systems in general, and materials for filling central heating plants, e. g., oil, salt solutions, and the like.
4. Warm-water heating systems with acceleration of the circulation by special means.
5. Hot-water heating systems.

**CENTRAL AIR HEATING SYSTEMS, INCLUDING STEAM AIR AND WATER AIR HEATING SYSTEMS.** (Gr. 6-8.)

6. Central air-heating systems in general. (Cf. air-heating stoves, 36a, 18.)
7. Apparatus for moistening and mixing air for central air-heating systems. (Humidifiers, 36d, 12-15.)
8. Air-heating furnaces for central air-heating systems.

**SPECIAL STRUCTURAL PARTS FOR CENTRAL HEATING SYSTEMS.** (Gr. 9-11.)

9. Radiating bodies (radiators and ribbed heating bodies or tubes) exclusive of gr. 12).
10. Boilers for central heating systems, excepting sectional boilers. (Cf. 24a, 10.)
11. Regulating devices and other parts for central heating systems (exclusive of gr. 2, 7, 9, and 10). (Automatic temperature regulators for heating and ventilating systems in buildings, 36f.)

12. Steam and water stoves with central or separate heating arrangements (exclusive of gr. 9).
13. Steam bath and water bath cooking apparatus.

**36d. Ventilating Mechanism; Chimney Caps and Cows; Humidifiers.****VENTILATING MECHANISM.** (Gr. 1-8.)

1. Ventilating in general, changing the temperature, regulating the moisture, purifying (exclusive of gr. 2-8 and 12-15; disinfecting 30i, 5; hygrometers, 42i, 19).
2. Removing dust from the air (filters, washers, and the like for ventilating purposes). (Dust collectors for general use, 50e; for suction cleaners, 8e, 3.)
3. Drying the air, removing hot vapors from the air.
4. Air inlets (air valves, etc.). (Cf. 37d, 15.)



## 36d--Continued.

5. Distribution of air (through air conduits). (Cf. 36c, 6-8.)
6. Moving the air by means of blowers, fans, jet blowers, etc. (Cf. 27c, 6; 33a, 15.)
7. Moving the air by producing differences in temperature (by means of stoves, lamps, and the like). (Cf. 36a.)
8. Moving the air by the use of wind power (ventilating caps).

## CHIMNEY CAPS AND COWLS. (Gr. 9-11.)

9. Fixed chimney caps; smoke catchers for engine sheds.
10. Chimney cowls with rotary parts.
11. Chimney cowls with flaps, wheels, or the like, operated by the wind.

## HUMIDIFIERS. (Gr. 12-15.) (Cf. 36c, 7; 42i, 19.)

12. Moistening the air by evaporation from fixed surfaces; evaporating receptacles for heating bodies.
13. Moistening the air by evaporation from movable surfaces (rotary disks or drums).
14. Moistening the air by means of spraying nozzles.
15. Moistening by means of centrifugal sprayers; blowers with fluid injectors.

## 36e. Heaters for Fluids, e. g., Bath Heaters.

1. Heaters in which the water is separate from the heating agent (indirect heating) so far as not classified in groups 3, 4, and 6.
2. Heaters in which the water contacts directly with the heating agent (cf. 13g, 6) so far as not classified in groups 3, 4, and 6.
3. Heaters for fluids comprising coiled tubes or tubes in other arrangements.
4. Folding and collapsible heaters for fluids.
5. Interacting regulating devices for supplying water and heating material.
6. Heating mechanism for fluid receptacles. (Cf. 31k, 4.)

## 36f. Heat Regulators (automatic regulators of heat or temperature for heating and ventilating plants in buildings). (Heat regulators for general use, 42i; for incubators, etc., 44h; draft regulators, 24i.)

1. Heat regulators comprising valves adjusted by the expansion of a solid body.
2. Heat regulators comprising valves adjusted by the expansion of a fluid body by means of diaphragms.
3. Heat regulators comprising valves adjusted by the action of a fluid body upon a float, piston, or counterweighted receptacle, or by direct cut-off of the passage for the heating means.
4. Heat regulators comprising valves adjusted by a thermostatically controlled pressure medium (compressed air or steam).
5. Heat regulators comprising valves adjusted by electromagnets.
6. Miscellaneous automatic heat regulators for central heating and ventilating plants.

## CLASS 37.—BUILDINGS.

## 37a. Supporting and Inclosing Structures, e. g., Ceilings, Walls, and Roofs, Including Exterior Wall Coverings, Drying and Insulating Arrangements.

## CEILINGS. (Gr. 1-3.)

1. Load-supporting ceilings of shaped stone or slabs. (Cf. 37b, 1, 2.)

## 37a--Continued.

2. Load-supporting ceilings of concrete and reinforced concrete. (Cf. 37b, 1-4; 36d, 6, 7; 80a, 48; 80b, 16.)
3. Inserted ceilings, false ceilings, plastered ceilings, plaster supports, and lathing, including that for walls. (Cf. 37d, 32.)

## WALLS. (Gr. 4, 5.)

4. Walls constructed of shaped stone and slabs, including exterior wall coverings and columns and pillars built into the structure; collapsible partitions. (Covering slabs, 37b, 2; cf. 37b, 1, 2; 37d, 33.)
5. Walls of concrete and reinforced concrete, including columns and pillars built into the structure. (Cf. 37b, 1-4; 80a, 48; 80b, 16.)

6. Roofs (Trusses, 37b, 3). (Cf. 37b, 3; 37c, 8; 37d, 26; 37f, 1-4.)
7. Means for preventing transmission of moisture, heat, and sound, also protection against fire, fungus, and decomposition of wood (structural elements, 37b, 6), drying arrangements in connection with building operations, also in connection with building parts which are located under water. (Cf. 37b, 6; 82a, 1-22.)

## 37b. Structural Elements Comprising Stone, Wood, and Iron, e. g., Building Stone, Slabs, Supporting Elements, Beams and Posts of Wood, Iron, or Iron and Concrete; Stone, Wood, and Iron Connecting Elements.

1. Building stone (exclusive of paving stone, 19c; roofing tile, 37c, 1), chimney stone (also in 37f, 5; cf. 37a, 77f, 23; 80b, 7-25).
2. Building plates and miscellaneous building materials. (Cf. 19c; 37a; 55f, 8; 80b, 7-25.)
3. Supporting elements (including trusses for roofs, etc.), columns, joists, posts, masts, and pillars of stone, wood, iron, and reinforced concrete. (Cf. 7a; 19d; 37a; 37d, 36; foundation piles, 84c, 2; collapsible and portable masts, 37f, 4, 7; poles for electric conductors also in 21a, 71; 21c, 12.)
4. Iron reinforcing elements for reinforced concrete, also stamped and corrugated sheet metal for building purposes. (Cf. 7b; 7c; 37a; 37c.)
5. Fasteners and connections for stone, wood, and iron in building structures, such as nails, clamps, hooks, dowels, bolts, and anchors. (Cf. 19a; 34e, 18; 37d; 38d, 1-3; 47a; 47f; 77f, 23; 81c, 1-4.)
6. Insulating coverings and other structural elements for protection against transmission of moisture, heat, and sound, also for protection against fire, fungus, and decomposition of wood. (Cf. 37a, 7; 38h, 2-4.)

## 37c. Roof Coverings, Dormer Windows, Skylights, and Drainage Arrangements. (Scaffolds for working on roofs, 37e, 1 to 7.)

1. Grooved roofing tile.
2. Sheet metal and wire clamps and hooks for fastening tiling and sheeting or lath.
3. Paper and metal backing for tile roofing.
4. Slate roofing.
5. Metal roofing.
6. Roofs of "wood cement" [a mixture of tar, asphalt, and sulphur], with sand-retaining moldings for the same, felt roofs and roofing of continuous coating materials, as asphalt, etc.
7. Roofs of straw, reeds, wood, or cloth.

## 37c—Continued.

8. Glass roofing.
9. Dormer windows, skylights for buildings, roof hatches. (Skylights for ships, also ship's hatches, 65a, 12; skylight windows, 37d, 15, and hatches for buildings, 37d, 38; cf. 68b, 17-27.)
10. Drainage arrangements (roof gutters, rain spouts, wall hooks, snow traps. (Cf. 47f.)
11. Miscellaneous mechanism for roofing, exclusive of gr. 1-10, implements and tools for working on roofs; e. g., tongs for cutting slate, drills, hammers, etc.

**37d. Interior and Exterior Finishing of Buildings, Including Stairs, Floors, Windows and Doors, and Weather Strips for the Same; Window Shutters, Awnings and Venetian Blinds, Hangings for Church Bells (ringing apparatus, class 74a), and Acoustic Arrangements, Paper Hanging and Plastering (painting, class 75c), Paneling, Fastening Flagstaffs and Lightning Rods, Railings and Fences (also class 7d), Turnstiles.**

## STAIRS. (Gr. 1-4.)

1. Stairs of heavy materials, including those of concrete and armored concrete.
2. Wooden stairs.
3. Step coverings, hand rails, banisters, special arrangements of stairs.
4. Iron stairs.

**FLOORS AND HOUSE PAVEMENTS. (Gr. 5-7.) (Paving for traffic ways, etc., 19c.)**

5. Wooden floors.
6. Floors of stone and artificial stone.
7. Floors without joints.

**WINDOWS. (Gr. 8-17.) (Fastenings, 68b; other fittings, 68c and d.)**

8. Windows pivoted on a vertical axis.
9. Windows pivoted on a horizontal axis, including trap windows.
10. Vertically sliding windows.
11. Horizontally sliding windows.
12. Sliding windows with hinged sash.
13. Show windows (structure). (Cf. 54g.)
14. Window screens.
15. Ventilating arrangements in connection with windows (glass gratings, skylight windows). (Cf. 68b, 17-27; 68d, 19-34; skylights, 37c, 9; 65a, 12.)
16. Protection of windows against dirt and other deposits. (Cf. 22g, 10; 34c, 3.)
17. Miscellaneous features in connection with windows, also metal windows.

**DOORS. (Gr. 18 to 23.) (Locks, 68 a and b; other fittings, 68 c and d.)**

18. Swing doors, including doors pivoted to swing sideways.
19. Rotary doors.
20. Sliding doors.
21. Grated doors.
22. Flexible roll doors.
23. Doors which fold or slide together (movable partitions), fireproof doors.

24. Means for closing the joints in connection with windows and doors.

## 37d—Continued.

25. Window shutters and window gratings.
26. Awnings, also canvas covers for large, open spaces, tents, and the like.
27. Slat curtains, Venetian blinds, etc.
28. Roll shutters. (Curtains, 34e, 7 to 9, 13, 19.)
29. Hanging apparatus for church bells.
30. Acoustical arrangements for buildings (sound deadening, etc.). (Structural elements for preventing transmission of sound, 37b, 6.)
31. Processes and apparatus for applying paper to walls and ceilings.
32. Processes and apparatus for plastering and pointing up walls and ceilings; molding patterns. (Cf. 37a, 3.)
33. Wall and ceiling paneling and coverings of wood, wood pulp, stone, artificial stone, and metal.
34. Means for fastening flags and flagstaffs.
35. Lightning-rod fastenings. (Cf. 21c, 11.)
36. Gratings and fences, including lattice gates, also wire-fence stretchers. (Walls, 37a, 4 and 5.)
37. Turnstiles. (Coin-controlled turnstiles, 43b, 55.)
38. Hatches for buildings, including cellar or floor hatches, exclusive of roof hatches, 37c, 1 to 9.
39. Miscellaneous features in connection with the finishing of buildings, exclusive of gr. 1 to 38, as wickets, peepholes, fastenings for emergency openings, cellar windows, shoe-cleaning grates, protection against fresh paint, emergency exits for crowds.
40. Miscellaneous apparatus and tools used in finishing buildings, as floor jacks; tools for marking out stair steps; cleaning façades; wall and floor scrapers, cleaners, and polishers; devices for stuffing up cracks, filling in joints, and puttying windows; trowels; tools for cutting linoleum, glass, etc.; chalk-line cases.

**37e. Scaffolding, Including Auxiliary Apparatus for Building Purposes, Such as Stone Chutes, Centering, etc. (See also class 19d and 1e.)**

**WORKMEN'S SCAFFOLDS FOR BUILDING PURPOSES. (Gr. 1 to 8.)**

1. Pole and mast scaffolds and framed scaffolds.
2. Ladder scaffolds and ladder brackets. [Cf. 341, 23; 61a.]
3. Trestles.
4. Flying scaffolds. (Cf. 341, 23.)
5. Hanging scaffolds.
6. Shiftable scaffolds, exclusive of gr. 1 to 5, lazy-tongs scaffolds. (Cf. 19d.) Climbing scaffolds for chimneys, towers, and the like. (Cf. 37f.)
7. Scaffolds for the use of workmen on roofs, exclusive of gr. 1 to 6.
8. Scaffold holders and binders.

**SCAFFOLD MOLDS AND CENTERING FOR BUILDING PURPOSES. (Gr. 9-11.)**

9. Scaffold molds for constructing walls. (Cf. 37a, 4, 5.)
10. Scaffold molds for constructing ceilings. (Cf. 37a, 1 to 3.)
11. Scaffold molds and centering for constructing arches, chimneys, columns, conduits, tunnels, and the like in permanent locations. (Cf. gr. 9 and 10.)

12. Apparatus for raising and moving buildings.
13. Miscellaneous auxiliary building apparatus exclusive of gr. 1 to 12, as stone chutes, brick-masons' gauges, braces (cf. 5c, 4), scaffold tensioning screws, and the like.



**37f. Structures of Various Kinds, as Theater and Circus Structures, Agricultural Buildings, Amusement Structures, Ice and Storage Cellars (ice cellars also class 17c), Granaries, Bins, etc. (also class 81c), Halls and Panoramas, Gas Holders, Water Reservoirs (dams, class 84a), Collapsible and Portable Buildings and the Like; also Chimney Structures, Garbage Chutes, Cesspools, and Burial Structures.**

1. Theater and circus structures, panoramas, and other structures for public amusements; structures for games. (Cf. 77g, 1, 3, 5.)
2. Agricultural buildings (cf. 45h, 1), ice and storage cellars (cf. 17c, 1), granaries, elevators, etc. (structure), (apparatus in connection with same, 81e, 36).
3. Gas-holder structures and water reservoirs. (Cf. 4c, 33; water tanks for houses, 85d, 3; dams, 84a, 4; weirs, 84a, 3).
4. Collapsible and portable buildings, barracks, towers, and masts, also tents in the nature of collapsible and portable buildings. (Ordinary tents, 33d, 1.)
5. Chimney structure. (Cf. 37b, 1; scaffolding, 37e, 11.)
6. Garbage chutes, cesspools. (Cf. 34k, 6 and 7; 85e, h.)
7. Miscellaneous structures, e. g., structural arrangement of warehouses, libraries, compartments for storage of merchandise, towers, and masts.
8. Hangars and similar large structures, also gates for the same.
9. Structures relating to burial.

#### CLASS 38.—WOODWORKING AND PRESERVING.

**38a. Saws, Including Saw Sharpening and Setting.** (Safety devices under e.)

**SAWS.** (Gr. 1 to 10.) (Saws combined with other woodworking machines, 38b, 7.)

1. Vertical frame saws.
2. Horizontal frame saws.
3. Hangers and caps for frame saws.
4. Woodworking band saws. (Cf. 49b, 22.)
5. Woodworking circular saws. (Cf. 49b, 21.)
6. Woodworking crosscut saws.
7. Bow saws and scroll saws.
8. Feeding mechanism for woodworking saws.
9. Block or log holders and carriages for woodworking saws.
10. Handsaws for woodworking.

**CARE OF SAWS.** (Gr. 11-15.)

11. Tooth forms (inserted teeth), for woodworking saws.
12. Grinding apparatus.
13. Filing apparatus.
14. Setting apparatus. (Cf. gr. 15.)
15. Combined sharpening and setting apparatus. (Cf. gr. 14; 49b, 23.)

**38b. Planing, Boring, Shaping, Turning, and Universal Woodworking Machines.** (Tools, under e.)

1. Planers in general.
2. Bead or round molding planers.
3. Planers for moldings, including hollow moldings.
4. Boring machines.
5. Cutting and shaping machines.
6. Woodworking lathes. (Metal-working lathes, 49a.)
7. Universal machines and other combined machines for woodworking.
8. Feed mechanism for planers or boring and cutting machines for woodworking.

**38c. Veneering, Smoothing, Polishing (Polishes, class 22h, ornamentation, class 75). Making of Molding and Mitered Work, Frame-Making Apparatus.** (Gilding of moldings, lacquering processes for wood and the like, class 75c).

1. Veneering and combinations of veneers of wood with other materials. (Cf. 38k, 2, 4.)
2. Smoothing and polishing wood. (Wood-polishing processes, 75c, 5.)
3. Manufacture of wood moldings.
4. Miter-sawing apparatus for wood.
5. Miter planing, cutting, stamping, and shaping mechanism for wood.
6. Clamps for wood frames (picture frames). (Cf. 38e, 8.)

**38d. Making Dovetailed Work and Tenons, Also Chests, Trunks, and Boxes, Including Mortising and Nailing Machines.**

1. Making dovetailed work and tenon work.
2. Making chests and trunks of wood. (Cf. 44b, 18; 81c, 1-4.)
3. Making wooden boxes (match boxes, etc.).
4. Mortising machines.
5. Box-nailing machines.

**38e. Auxiliary Machines and Apparatus, Tools, and Safety Devices, Including Those for Saws.**

**WOODWORKING TOOLS.** (Gr. 1-5.)

1. Cutter heads for woodworking (for planers, etc.).
2. Wood-boring tools.
3. Planes and drawknives for woodworking.
4. Framing chisels.
5. Miscellaneous woodworking tools exclusive of gr. 1-4.

**AUXILIARY WOODWORKING MACHINES AND APPARATUS.** (Gr. 6-9.)

6. Machines and apparatus for setting door and window fittings.
7. Carpenters' workbenches.
8. Woodworking clamps (also glue presses, those for wood frames 38c, 6).
9. Glue pots.

**SAFETY DEVICES FOR WOODWORKING.** (Gr. 10-11.)

10. Safety devices in connection with woodworking saws.
11. Safety devices in connection with woodworking planers and shapers.

**38f. Wood Bending, Including Coopering and Wheel Making.** (Tightening of tires, 63d, 6.)

1. Wood bending.
2. Manufacture of staves.
3. Apparatus for setting up staves and barrel heads.
4. Apparatus for bending together barrel staves.
5. Apparatus for driving on hoops.
6. Making bungs and bungholes.
7. Making wooden wheels. (Cf. 63d, 6.)

**38g. Cane, Cork, and Similar Materials** (Mechanical features).

1. Mechanical working of cane or reed.
2. Mechanism for working cork and similar materials.

**38h. Processes and Apparatus for Drying and Impregnating Wood, Cane, Cork, and Similar Materials, Including Steeping, Preserving, Fire proofing, Dyeing, and Staining.**

1. Steaming and steeping of wood, drying of wood and the like when combined with steeping or impregnating of the material (otherwise 82a).

## 38h—Continued.

2. Processes for impregnating wood in general. (Cf. gr. 3, 4.)
3. Processes for destroying injurious growths (especially dry-rot or mold). (Cf. gr. 2.)
4. Apparatus for impregnating wood.
5. Dyeing and staining wood.
6. Manipulation of cane, cork, and similar materials, and the manufacture of substitutes therefor.

## 38i. Removing Bark, Making Veneer Sheets, Wood Shavings, Wood Slivers, and Excelsior.

1. Removing bark from wood, e. g., bark-rossing machines. (Peeling reed or cane, 38g, 1.)
2. Making veneer sheets of wood (veneer cutting machines).
3. Slivering or making match sticks, toothpicks, etc. (Cf. 8a, 1; chemical treatment 78b.)
4. Making excelsior and wood shavings.

## 38k. Processes and Machines for Special Purposes, as the Making of Shingles, Packaging Sticks, Parquetry, Wooden Pins, etc.

1. Manufacture of shingles.
2. Processes and machines for making parquetry or similar plates.
3. Processes and machines for making wooden pins, etc.
4. Miscellaneous woodworking presses.
5. Apparatus and machines for special uses in woodworking.

## CLASS 39.—HORN, IVORY, AND OTHER MATERIALS FOR CARVING (exclusive of wood, class 38), CAOUTCHOUC, GUTTA-PERCHA, AND OTHER PLASTIC MATERIALS.

## 39a. Mechanical Features.

## HORN, IVORY, AND OTHER MATERIALS FOR CARVING IN GENERAL. (Gr. 1 to 4.) (Wood working, class 38, button making gr. 5-7.)

1. Working of horn in general (for buttons, gr. 5-7).
2. Working of ivory in general (buttons, gr. 5-7).
3. Working of whalebone (also whalebone substitutes).
4. Working of quills.

## MAKING BUTTONS OF HORN, IVORY, AND OTHER CARVING MATERIALS. (Gr. 5-7.) (Buttons per se gr. 44a.)

5. Making button blanks from horn and the like (e. g., by turning, cutting, or pressing).
6. Finishing button blanks of horn and the like (e. g., by drilling, grinding, and polishing).
7. Making finished buttons from the raw material (horn and the like).

## WORKING OF INDIA RUBBER AND GUTTA-PERCHA. (Gr. 8-13.) (Cf. 63e, for making inner tubes, tire casings, and solid rubber tires.)

8. Working of the raw caoutchouc.
9. General working of unvulcanized caoutchouc (e. g., kneading, rolling, and mixing).
10. Special working of unvulcanized caoutchouc (e. g., molding and stamping).
11. Vulcanizing caoutchouc, mechanical part. (Chemical part, 39b, 3.)
12. Working of vulcanized caoutchouc (soft rubber, hard rubber).
13. Working gutta-percha, mechanical part. (Chemical 39b, 1-3.)

## 39a—Continued.

## WORKING OF CELLULOID AND GELATINE. (Gr. 14-18.)

14. Making solid bodies of celluloid.
15. Making hollow bodies of celluloid
16. Making celluloid films.
17. Making celluloid coatings on various articles.
18. Manipulation of gelatine (e. g., forming sheets, capsules, artificial pearls).

## WORKING OF MISCELLANEOUS PLASTIC MATERIALS. (Gr. 19-24.)

19. Working of miscellaneous plastic materials in general (mechanical part).
20. Working up miscellaneous plastic materials into combs (e. g., hard rubber, celluloid)
21. Working up miscellaneous plastic materials (e. g., amber) into cigar holders and the like
22. Working up miscellaneous plastic materials into dolls (e. g., celluloid, papier-maché).
23. Working up miscellaneous plastic materials into shoe eyelets.
24. Working up miscellaneous plastic materials into artificial leather. (Cf. 81, 2; 39b, 12; 55f, 14.)

## 39b. Chemical Features.

## INDIA RUBBER AND GUTTA-PERCHA. (Gr. 1-4.)

1. India rubber and gutta-percha in general (chemical part), including extraction and purification of the rubber.
2. Regenerating india rubber and gutta-percha
3. Vulcanizing processes for india rubber and gutta-percha.
4. India rubber substitutes, including sulphuretted oils, or factice.

## CELLULOID. (Gr. 5-7.)

5. Celluloid in general. (Cf. gr. 5, 6.)
6. Materials analogous to celluloid (mixtures of cellulose esters and camphor substitutes).
7. Celluloid compositions which do not burn readily.

## PLASTIC COMPOSITIONS. (Gr. 8-12.)

8. Plastic compositions in general (chemical part). (Cf. gr. 9-12.) Films in so far as they serve solely as a support for the sensitive material (otherwise in 57a, 37; 57b, 1-3).
9. Insulating materials. (Cf. 21c, 2; 37b, 6; 47f, 27; 80b, 9.)
10. Casein compositions.
11. Cork compositions.
12. Artificial leather composed of a mixture of plastic compositions. (Cf. 81, 2; 39a, 24; 55f, 14.)

## CLASS 40.—METALLURGY AND ALLOYS (exclusive of metallurgy of iron, class 18, and sheet metal and wire manufacture, class 7a, b).

## 40a. Metallurgy and the Treatment of Metallurgical Slags. (Electrometallurgy, 40c; iron, 18a to c; compounds of heavy metals, 12n); (Metallurgy in general, gr. 1-17, special applications, gr. 18 et seq.)

## PRELIMINARY TREATMENT OF ORES, INCLUDING ROASTING. (Gr. 1-6.)

1. Preliminary treatment of ores for smelting, including binding together, chemical dressing, and the like. (For iron ores, 18a, 1, 2.)
2. General roasting processes for ores. (Cf. 1b, 2.)



## 40a—Continued.

3. Roasting furnaces for ores in general.
4. Roasting furnaces, comprising stirring and conveying mechanism.
5. Roasting furnaces having a rotary movement about the longitudinal axis.
6. Roasting furnaces comprising movable hearths.

METALLURGICAL FURNACES. (Gr. 7-10.) (Cf. 18c, 5, 9, 10; 48d, 5.)

7. Shaft furnaces for metallurgy.
8. Reverberatory furnaces for metallurgy. (Cf. 31a, 2; Reverberatory heating, 21c, 9.)
9. Furnaces for crucibles or other receptacles. (Heating of the same, 24c.)
10. Charging and emptying apparatus for metallurgical furnaces.

MISCELLANEOUS GENERAL PROCESSES FOR METALLURGY. (Gr. 11-16.)

11. Processes of reducing ores by means of aluminum, carbides, and the like.
12. Miscellaneous processes of reducing ores.
13. Lixiviating of ores in general.
14. Treatment of metallurgical slags.
15. Extraction of the gases from furnace fumes. (Purification of gases, cf. 10a, 19; 12e, 2; 26d, 1 and 5.)
16. Utilization of furnace dust.

17. Miscellaneous features in connection with metallurgy (exclusive of gr. 1-16, and 18-50), e. g., purification of metals so far as not provided for in special groups.

LEAD AND SILVER EXTRACTION. (Gr. 18, 19.)

18. Metallurgical processes of extracting lead.
19. Metallurgical processes of extracting silver.

EXTRACTION OF GOLD. (Gr. 20-25.)

20. Cyanide processes for extracting gold.
21. Chloride processes for extracting gold.
22. Precipitation of gold and silver from solutions.
23. Amalgamation processes for extracting gold.
24. Apparatus for extracting gold by amalgamation.
25. Miscellaneous wet and dry processes for extracting gold, exclusive of gr. 20-23.

EXTRACTION OF COPPER. (Gr. 26-32.)

26. Roasting copper ores.
27. Treatment of copper ores and matte in shaft furnaces; also general processes.
28. Treatment of copper ores and matte in reverberatory furnaces.
29. Treatment of copper ores and matte by bessemerizing.
30. Purifying and refining copper.
31. Extraction of copper by the wet method.
32. Metallurgical treatment of ores containing mixed sulphides.

EXTRACTION OF ZINC AND CADMIUM. (Gr. 33-42.)

33. Preliminary treatment of zinc ores (also treatment of the muffle residues).
34. Processes of distilling zinc (production of zinc by distillation by the electrothermal method, 40c, 13), refining zinc.
35. Retorts for distilling zinc.
36. Condensers for zinc retorts.

## 40a—Continued.

37. Muffle furnaces for distilling zinc. (Furnace heating, 24c.)
38. Tubular furnaces for distilling zinc. (Furnace heating, 24c.)
39. Zinc extraction in shaft and reverberatory furnaces.
40. Zinc extraction in crucible furnaces and upright retorts.
41. Manufacture of zinc oxide from the ores. (Cf. 12n.)
42. Zinc extraction by the wet method.

EXTRACTION OF HEAVY METALS EXCLUSIVE OF LEAD, SILVER, GOLD, COPPER, ZINC, AND CADMIUM; ALSO OF HEAVY SEMIMETALS. (Gr. 43-46.)

43. Extraction of nickel and cobalt.
44. Extraction of tin, also detinning of tin plate. (Cf. 40c, 10.)
45. Extraction of antimony, arsenic, and bismuth.
46. Preparation of chromium, manganese, and tungsten and the other heavy metals not elsewhere mentioned. (Iron extraction, 18a, d.)

PREPARATION OF LIGHT METALS AND EARTH METALS (alkali metals and metals of the alkaline earths, as well as earth metals generally; electrolytic preparation, 40c, 5 and 6.) (Gr. 47-51.)

47. Preparation of the alkali metals and alkaline earth metals, especially sodium, potassium, barium, strontium and calcium. (Magnesium, 48.)
48. Preparation of magnesium, also beryllium.
49. Preparation of aluminum by the use of alkali metals as reducing agents.
50. Preparation of aluminum by means of reducing agents with the exception of alkali metals.
51. Preparation of metals of the rare earths and similar elements (e. g., those of the yttria group; tantalum, thorium, titanium, etc.).

## 40b. Alloys.

1. Alloys in general. (Iron alloys, 18b, 20.)
2. Alloys consisting chiefly of aluminum.

40c. Electro-Metallurgy. (Preparation of metals by electrolytic or electrothermal processes.)

ELECTRO-METALLURGICAL PROCESSES AND APPARATUS IN GENERAL. (Gr. 1-4.)

1. Preparation of metals by electrolysis in cold bath, in general.
2. Preparation of metals by electrolysis in fused bath, in general.
3. Electrodes, diaphragms, and the like for the preparation of metals by cold-bath electrolysis. (Cf. 12h, 2, 3; 21b, 2, 7.)
4. Electrodes, diaphragms, and the like for the preparation of metals by hot-bath electrolysis. (Cf. 12h, 2, 3; 21b, 2, 7.)

ELECTROLYTIC PREPARATION OF LIGHT METALS AND EARTH METALS (especially of sodium, potassium, magnesium, barium, strontium, calcium, aluminum, and metals of the rare earths, e. g., thorium, vanadium, zirconium, cerium, didymium). (Gr. 5 and 6.) (Cf. 40a, 47-51.)

5. Electrolytic preparation of the light metals and earth metals in cold bath.
6. Electrolytic preparation of the light metals and earth metals in fused bath.

## 40c—Continued.

**ELECTROLYTIC PREPARATION OF HEAVY METALS.** (Gr. 7-13.) (Cf. 48a, 5, 6.)

7. Electrolytic preparation of precious metals, e. g., gold, silver, platinum.
8. Electrolytic preparation of nickel and cobalt in cold bath.
9. Electrolytic preparation of copper in cold bath.
10. Electrolytic preparation of tin in cold bath; also detinning tin scrap. (Cf. 40a, 44.)
11. Electrolytic preparation of zinc and cadmium in cold bath.
12. Electrolytic preparation of other heavy metals, exclusive of gr. 7-11, e. g., lead, chromium, or manganese, in cold bath.
13. Electrolytic preparation of heavy metals, exclusive of the precious metals, e. g., zinc, lead, or manganese, in fused bath. (Cf. gr. 7.)

**MANUFACTURE OF ALLOYS.** (Gr. 14 and 15.)

14. Manufacture of alloys (e. g., copper, zinc, or tin alloys) by electrolytic method in cold bath.
15. Manufacture of alloys, e. g., sodium, aluminum, lead, tin, or zinc alloys, in the fused bath (electrolytic or electrothermal process). (Cf. gr. 16.)
16. Electrothermal treatment of ores and metallurgical products, or the like, for the purpose of extracting metals (e. g., the production of zinc; also zinc oxide, in electric furnaces; for iron, see 18a). (Cf. 12n, 1; 21h, 6 to 11.)

**CLASS 41.—MANUFACTURE OF HATS AND FELT.****41a. Hat Manufacture.**

1. Making of hat bats (bat-forming machines, conical bat machines, bat-forming tools, producing imitation effects).
2. Blocking (pressing, steaming, and stretching of hats).
3. Manipulation of hat brims.
4. Hat finishing (polishing, ironing, smoothing, brushing, impregnating, and stiffening). (Cf. 28a, 12.)
5. Measuring apparatus for hats.
6. Miscellaneous mechanism for hat making, exclusive of gr. 1 to 5, e. g., for making wire forms for hat frames, apparatus for changing the form and size of finished hats.

**41b. Hat Finishing Operations.**

1. Fitting of hats and hat trimmings, e. g., hat bands, hat-block holders, also stands for trimming ladies' hats. (Cf. 52a.)
2. Sweat bands and ventilating arrangements for head coverings. (Cf. 52a.)

**41c. Other Head Coverings** (helmets, caps, straw hats, and the like).

1. Helmets and helmet covers.
2. Caps, also hats of special form, e. g., traveling caps, head coverings with means for protecting the eyes, ears, and neck, with air pads, with removable linings and the like, miners' and automobile caps.
3. Straw hats.
4. Crush hats and caps with flaps, also protective coverings.
5. Miscellaneous head coverings, exclusive of gr. 1 to 4, e. g., head coverings of special materials, collapsible head coverings. (Ladies' head coverings, hood, bath hoods, bath caps, 3b, 25.)

## 41c—Continued.

6. Hats and other head coverings comprising means for attaching articles, e. g., memorandum tablets, mirrors, markers, lamps, safety devices. (Fastenings used in connection with devices to prevent exchange and theft, 68a, 107.)
7. Hats and other head coverings of adjustable sizes.
8. Fastening means for head coverings, including elastic cords. (Ladies' hat fasteners, 3b, 25; veil fasteners, 3b, 26.)

**41d. Felts.**

1. Preliminary treatment of hair for felting, including treatment of hair upon the hide, e. g., by caustics. (Cf. 28b, 1 to 3.)
2. Felting and felt machines.
3. Special felts.
4. Finishing of felts, working, pressing, plaiting, etc.

**CLASS 42.—INSTRUMENTS.**

- 42a. Instruments for Mechanical Drawing, Including Compasses and Other Curve-Drawing Instruments, Caliper compasses, Ruling Pens, Hatching Devices, Pantographs, and Perspective Drawing Apparatus.** (Drawing appliances in general, 70a and 70e; for cases of instruments see the separate parts, as drawing pens, compasses, etc.)

**COMPASSES.** (Gr. 1-7.) (Special curve-drawing compasses, 11-15.)

1. Measuring compasses, caliper compasses
2. Parallel leg compasses.
3. Beam compasses
4. Compasses of sheet metal and the like. (Manufacture, 7c, 40.)
5. Compass-point fastenings.
6. Miscellaneous compasses, exclusive of groups 1 to 4. (Cf. gr. 10-12.)
7. Joints for compasses.
8. Adjusting devices for compasses.

**DRAWING OR RULING PENS.** (Gr. 9 and 10.)

9. Ordinary drawing pens. (Manufacture, 7c, 40.)
10. Fountain drawing pens. (Fountain pens for writing, etc., 70b.)

**CURVE-DRAWING INSTRUMENTS.** (Gr. 11-15.)

11. Appliances for drawing conic sections.
12. Appliances for drawing ellipses only.
13. Appliances for drawing spirals.
14. Appliances for drawing miscellaneous curves.
15. French curves. (Cf. 3d, 1; 70e, 8.)

**MISCELLANEOUS INSTRUMENTS FOR MECHANICAL DRAWING.** (Gr. 16-20.)

16. Pantographs. (Elastic pantographs, 15c, 5.)
17. Apparatus for perspective drawing.
18. Optical drawing instruments. (Cf. 70c, 19.)
19. Hatching apparatus. (Cf. 70e, 10.)
20. Miscellaneous mathematical drawing instruments, exclusive of gr. 16 to 19. (Cf. 70e, 10.)

- 42b. Measuring Implements, Including Measures of Length and Thickness, Dividers, Tree-Measuring Calipers, Measuring Tools for Shop Use, as Calipers and Gauges.** (Devices for measuring profiles and forms, class 75.)



## 42b—Continued.

## MEASURES OF LENGTH. (Gr. 1-8.)

1. Folding rules.
2. Sliding rules.
3. Rules of various kinds, exclusive of groups 1 and 2.
4. Measuring tapes and chains.
5. Measuring devices for ropes, ribbons, etc. (For textile goods, 8f, 1, 2, and 4.)
6. Measuring wheels.
7. Length-measuring devices for the body and devices for facilitating identification. (Cf. 30a, 4.)
8. Miscellaneous devices for measuring length, exclusive of groups 1 to 7.

## MEASURES OF THICKNESS AND APERTURES. (Gr. 9-12.) (Cone gauges, gr. 21; gauges for inside measurements, templates, and the like, gr. 22.)

9. Devices of the caliper type for measuring thickness and apertures.
  10. Wire gauges and the like.
  11. Gauges for sheet metal, leather, paper, and the like.
  12. Devices of various kinds for measuring thickness, and apertures, exclusive of gr. 9 to 11, e. g., finger-ring gauges and the like.
- 
13. Devices for measuring trees, including calipers and the like.

## DIVIDERS. (Gr. 14-16.)

14. Line dividers.
15. Angle and circle dividers.
16. Dividers of various kinds, exclusive of gr. 14 and 15.

## MEASURING TOOLS FOR SHOP USE. (Gr. 17-24.)

17. Caliber gauges and fixed gauges (including devices with exchangeable jaws; for limit gauges see gr. 22.)
  18. Slide gauges (caliper scales).
  19. Screw gauges (micrometers.) (Cf. 42c, 19.)
  20. Gauges for screw threads.
  21. Angle gauges, inclination measures and the like, including cone and ball gauges and bevels. (Gauges for thickness and apertures, gr. 9-12.)
  22. Gauges of various kinds, exclusive of groups 9 to 12 and 17 to 21, including limit gauges, depth gauges (measures of depth, 42c, 28-31), gauges for inside measurements, templates, means for determining diameters, etc. (Centering devices, gr. 23.)
  23. Marking gauges, parallel and other markers, also centering devices for workshop use. (Centering devices combined with center punches, 49a, 58.)
  24. Measuring devices in combination with machine tools and other machines.
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25. Measuring devices for the use of marksmen.
  26. Miscellaneous measuring implements exclusive of gr. 1 to 25.

## 42c. Measuring Instruments, not Including Electric, Inclusive of Geodetic and Nautical Instruments, and Apparatuses, also Gyrostatic Apparatus.

## STANDS OR TRIPODS. (Gr. 1-3.)

1. Stands for measuring instruments in general. (Cf. 421, 13; 51c, 8; 57a, 10.)

## 42c—Continued.

2. Tripod feet.
3. Tripod heads (including devices for adjusting instruments horizontally and vertically).

## ANGLE MEASURING INSTRUMENTS. (Gr. 4 and 5.)

4. Angle measuring instruments of simple forms.
5. Theodolites and the like.

## LEVELING INSTRUMENTS. (Gr. 6 and 7.)

6. Instruments for measuring inclination, height, and slope.
7. Leveling instruments of the pendulum type.

## INSTRUMENTS FOR TAKING GEODETIC OBSERVATIONS. (Gr. 8-9.)

8. Nonautomatic apparatus for geodetic observations, including plane tables, tachymeters, apparatus for determining coordinates, and the like.
9. Automatic apparatus for taking geodetic observations.

- 
10. Surveyors' instruments including measuring staffs, plummets, range rods, tapes, and the like.
  11. Special apparatus and appliances for underground surveying and the like, including circumferentiators, compasses, clinometer compasses, orientation compasses, etc. (Cf. 5d, 8.)

## INSTRUMENTS FOR MEASURING SURFACES. (Gr. 12 and 13.)

12. Surface measures in general, including planimeters.
13. Machines for measuring leather and the like.

## INSTRUMENTS FOR MEASURING DISTANCE. (Gr. 14-23.)

14. Distance-measuring instruments, comprising a base line and two observation stations, including those in which the one sighting device may be shifted.
15. Instruments for measuring distance, comprising a base line and one station for taking observations.
16. Instruments for measuring distance, with a base line at the remote point.
17. Optical instruments for measuring distance, including double-image instruments, stereoscopic instruments, those comprising prisms or angle mirrors, and those operated by focusing.
18. Acoustic and electric instruments for measuring distances.
19. Instruments for measuring distance which employ a known scale for comparison (micrometer), which is located on the instrument or outside the instrument.
20. Instruments for measuring distance for objects in motion.
21. Instruments for measuring distance in combination with other instruments, also in combination with firearms. (Cf. 72f, 12.)
22. Miscellaneous instruments for measuring distance exclusive of groups 14 to 21.
23. Miscellaneous elements of distance-measuring instruments. (Cf. gr. 14-22.)

## PLUMB LEVELS AND SPIRIT LEVELS. (Gr. 24-25.)

24. Levels employing a fluid.
25. Pendulum levels. (Cf. gr. 10.)

## 42c—Continued.

WATER LEVEL INDICATORS. (Gr. 26-27.) (Steam-boiler gauges, etc., 13c, 1-13.)

- 26. Gauge posts
- 27. Water-level indicators for closed receptacles.

DEPTH MEASURES, SOUNDING LEADS, AND SOUNDING MACHINES. (Gr. 28-31.) (Cf. 65a, 77.)

- 28. Electric depth measures.
- 29. Manometric depth measures.
- 30. Miscellaneous depth measures exclusive of groups 28 and 29.
- 31. Sounding machines.

COMPASSES. (Gr. 32-36.) (Telemetric compasses, 74b, 7.)

- 32. Floating compasses and dry compasses.
- 33. Devices for determining and correcting deviating disturbances (declination, inclination, and deviation).
- 34. Registering compasses.
- 35. Gyrostatic compasses. (Cf. gr. 42.)
- 36. Miscellaneous elements of compasses, including scales, symbols, and the like.

INSTRUMENTS FOR DETERMINING TIME AND LOCATION, INCLUDING POSITION OF SHIPS. (Gr. 37-39.)

- 37. Sextants, octants, reflecting circles, and the like.
- 38. Artificial horizons.
- 39. Miscellaneous instruments for determining time and location, exclusive of gr. 37. (Cf. 42p, 11.)

40. Current meters for watercourses.

41. Miscellaneous nautical instruments, exclusive of gr. 28-40.

42. Devices for determining the center of gravity (balancing), gyrostatic apparatus for maintaining equilibrium. (Cf. 20a, 10; 63c, 24, 26; 65a, 80; 77h, 5, 15.)

43. Miscellaneous geodetic instruments, exclusive of gr. 1-27.

42d. Registering and Indicating Devices of General Application.

- 1. Registering apparatus independent of any specific instrument.
- 2. Indicating devices in general.
- 3. Writing or printing devices for registering apparatus.

42e. Measures of Volume for Industrial Use, Including Those for Air, Gas, Steam, Liquids; Water Meters and Meters for Granular Materials.

FLUID METERS, ESPECIALLY WATER METERS. (Gr. 1-22.)

- 1. Turbine water meters, general construction.
- 2. Regulating devices for turbine water meters.
- 3. Water meters of the Woltmann wheel type, general construction.
- 4. Regulating devices for water meters of the Woltmann wheel type.
- 5. (No patents.)
- 6. Disk water meters.
- 7. Water meters with rotary pistons and the like (rotary pump type).
- 8. Piston water meters with one fixed measuring cylinder.

## 42e—Continued.

- 9. Piston water meters with two or more fixed measuring cylinders.
- 10. Piston water meters with movable measuring cylinders.
- 11. Water-meter combinations (large and small meters).
- 12. Proportional water meters.
- 13. Water meters operated by the weight of the water.
- 14. Fluid measurers in which the measurement depends on time of passage or velocity of passage of the fluid.
- 15. Fluid measurers with a tipping receptacle.
- 16. Fluid measurers with a fixed measuring chamber.
- 17. Fluid measurers with two fixed measuring chambers, including two-chamber measuring vessels.
- 18. Fluid measurers with movable partitions, as diaphragms and the like.
- 19. Fluid measurers combined with measuring cocks. (Cf. 64c, 30.)
- 20. Miscellaneous fluid measurers, exclusive of gr. 1-9. Electric registration, hand measures.
- 21. Regulating devices in connection with fluid measurers (exclusive of those for turbine and Woltmann water meters, gr. 2, 4).
- 22. Miscellaneous elements for fluid measurers. (Computing and indicating mechanism and the like.)

STEAM AND GAS METERS. (Gr. 23-26)

- 23. Steam meters, meters for the consumption of steam and the like.
- 24. Wet gas meters.
- 25. Dry gas meters.
- 26. Miscellaneous elements for gas meters (materials, testing apparatus, etc.).

MEASURING APPARATUS FOR DRY MATERIAL. (Gr. 27-29.)

- 27. Measuring apparatus for granular and pulverulent material.
- 28. Malt-measuring apparatus for malt mills.
- 29. Volume measures, apparatus for ascertaining the cubic contents.

42f. Scales and Weighing Machines. (For those combined with packaging machines see class 81a.)

- 1. Pendulum scales. (Cf. gr. 26.)
- 2. Scales with intermittently operating or successively connected weights (chain scales and the like).
- 3. Spring scales.
- 4. Elevated-pan scales. (Cf. gr. 1.)
- 5. Sliding poise scales in general.
- 6. Sliding poise scales with means for automatically shifting the poise.
- 7. Indicating and printing mechanism for sliding poise scales. (Cf. gr. 32 and 33.)
- 8. Platform scales in general.
- 9. Load-releasing and platform-holding devices for platform scales. (For track scales, gr. 10.)
- 10. Track scales. (Cf. gr. 13.)
- 11. Guide rails and the like, and shock absorbers for track scales.
- 12. Portable weighing apparatus.
- 13. Single-wheel scales for measuring wheel pressure of vehicles (locomotives, etc.).
- 14. Automatic scales for continuous operation comprising vertically swinging scale pans.
- 15. Automatic scales for continuous operation with tipping scale pans.
- 16. Automatic scales for continuous operation with two chambered oscillating weighing vessels, or with an oscillating partition in the weighing vessel.



## 42f—Continued.

17. Automatic weighing scales for continuous operation with rotary weighing vessels.
18. Automatic package filling and weighing apparatus. (Cf. 81a, 1, 16.)
19. Automatic sack-filling and weighing apparatus. (Cf. 81a, 3.)
20. Automatic weighing apparatus for continuous operation of various kinds and for various purposes, exclusive of groups 14 to 19.
21. Elements of automatic scales for continuous operation. (Cf. gr. 14-20 and 34.)
22. Beam balances and chemical balances.
23. Scales for special physical and chemical purposes. (Cf. gr. 22 and 31.)
24. Hydraulic and pneumatic scales.
25. Electric weighing apparatus.
26. Letter and pocket scales. (Cf. gr. 1.)
27. Weighing apparatus for hoisting mechanism (cranes and the like).
28. Weighing apparatus for transporting and loading mechanism, conveyer belts, bucket conveyers, cable ways, etc.
29. Price scales.
30. Paper, wool, and yarn scales.
31. Weighing apparatus of various kinds and for various purposes exclusive of gr. 1-30. (Cf. gr. 23.)
32. Computing and printing mechanism, registering and signal apparatus for weighing mechanism, exclusive of gr. 7 and 33.
33. Computing and printing mechanism, registering and signaling apparatus for weighing mechanism for traveling loads. (Cf. gr. 32.)
34. Elements of scales, exclusive of gr. 21, knife and other joints, hangings, scale pans, weights, adjustment, and damping.

## 42g. Acoustics, Including Acoustical Apparatus and Phonographs. (Acoustical signals, class 74d, sound dampers, class 30d.)

1. Acoustical apparatus exclusive of phonographs.

## REPRODUCING AND INSCRIBING MECHANISM FOR TALKING MACHINES (graphophones and gramophones). (Gr. 2-4.)

2. Reproducing and inscribing mechanism for graphophones.
3. Reproducing and inscribing mechanism for gramophones.
4. Miscellaneous features in reproducing and inscribing mechanism for talking machines.

## NEEDLE GUIDING MECHANISM FOR TALKING MACHINES. (Gr. 5-6.)

5. Carriage apparatus for talking machines.
6. Swinging needle supports for talking machines.

## DRIVING APPARATUS FOR TALKING MACHINES. (Gr. 7-10.)

7. Driving apparatus for talking machines with disk records.
8. Driving apparatus for talking machines with cylinders.
9. Driving mechanism for talking machines with disks and cylinders.
10. Driving mechanism for talking machines with a plurality of cylinders.

## COMBINATIONS OF TALKING MACHINES WITH OTHER APPARATUS. (Gr. 11-13.)

11. Combinations of talking machines with picture-exhibiting apparatus.

## 42g—Continued.

12. Combinations of talking machines with music players.
13. Combinations of talking machines with various articles (clocks, manikins, etc.).

## SEPARATE ELEMENTS OF TALKING MACHINES, EXCLUSIVE OF DRIVING MECHANISM AND POINTS. (Gr. 14-16.)

14. Sound-conducting features (special formation of the horn, etc.).
15. Means for reinforcing sound.
16. Form and material of the records.
17. Optical and electric phonographs.
18. Reproduction of the records for talking machines.
19. Miscellaneous apparatus for phonographs.

## 42h. Optics, Including Lenses, Systems of Lenses, Photographic Objectives, Prisms, Mirrors, Reflectors (optical part, for mechanical part cf. class 4d), Telescopes, Microscopes, Pocket Lenses, Microtomes, Photometers, Colorimeters, Spectroscopes, Polarization Apparatus, Projecting Apparatus, Stereoscopes, Kaleidoscopes, Magic Lanterns, Spectacles and Nose Glasses, Apparatus for Testing and Examining the Eyes, Optical Auxiliary Instruments for Photography, etc.

## OPTICAL LENSES AND SYSTEMS OF LENSES. (Gr. 1-6.)

1. Single lenses (lenses with irregular surfaces). (Cf. gr. 26.)
2. Eye pieces.
3. Telescope and microscope objectives, condensers for microscopes.
4. Photographic objectives.
5. Systems of lenses for kinetoscopes, etc.
6. Systems of lenses for various purposes, exclusive of groups 1 to 5 (systems for producing any desired distortion, magnifying systems, inverting systems, regulating of the focal distance, etc.).

## PRISMS AND MIRRORS FOR OPTICAL PURPOSES. (Gr. 7-9.)

7. Prisms for optical purposes.
8. Mirrors for optical purposes. (Mirror making, 32b, 10.)
9. Projectors, optical part. (Mechanical part, 4b, 11, 24.)

## TELESCOPES AND APPURTENANCES, EXCLUSIVE OF LENSES AND SYSTEMS OF LENSES. (Gr. 10-13.)

10. Single telescopes of various kinds, including reflectors, refractors, finding telescopes and sighting apparatus (cf. 72f, 3), submarine telescopes, periscopes, and the like. (Coin-controlled telescopes, 43b, 34.)
11. Double telescopes of the ordinary kind (opera glasses, binoculars).
12. Double telescopes comprising prisms.
13. Single and double telescopes with variable magnifying power.

## MICROSCOPES AND APPURTENANCES, INCLUDING MICROTOMES. (Gr. 14-16E.) (Pocket lenses, gr. 34.)

14. Microscopes in general, exclusive of the optical part. (Cf. gr. 1-3 and 6.)
15. Compressors and stages for microscopes.
16. Microtomes.

## 42h—Continued.

DEVICES FOR MEASURING LIGHT AND COLOR, E. G., PHOTOMETERS AND COLORIMETERS, AND TESTERS FOR THE DISTRIBUTION OF LIGHT. (Gr. 17-19.)

17. Photometers in general. (For photographic purposes, 57c, 4.)
18. Colorimeters in general.
19. Devices for measuring illumination in rooms, workshops, and the like.
20. Spectrum apparatus.
21. Polarization apparatus, saccharimeters, and the like.
22. Stereoscopes and similar apparatus for viewing pictures.
23. Projecting apparatus and appurtenances.
24. Kaleidoscopes and apparatus for testing and delineating color designs. (Cf. 77g, 9.)
25. Magic lanterns.

SPECTACLES AND NOSE GLASSES. (Gr. 26-31.)

26. Lenses for spectacles and nose glasses. (Cf. gr. 1.)
27. Fastening of the lenses.
28. Spectacles and nose glasses with adjustable lenses.
29. Spectacle frames and bows, nose-glass clamps, etc.
30. Lorgnettes and monacles.
31. Miscellaneous spectacles and nose glasses, exclusive of gr. 26 to 30. (Goggles, 30d, 27.)
32. Apparatus for testing and examining the eyes, including optometers, reflectometers, perimeters, eye mirrors, and spectacle-fitting apparatus. (Cf. 30a, 3.)
33. Optical accessories for photography, including diaphragms for objectives, finders, and the like. (Cf. 57a, 9, 30; 57d, 8.)
34. Miscellaneous optical instruments, exclusive of gr. 1 to 33; also pocket lenses and apparatus for measuring lenses.

42i. Devices for Measuring Heat and Moisture, Including Air, Liquid, and Metal Thermometers, Electric Thermometers, Pyrometers, Hygrometers, Calorimeters (telemetric, class 74b), Thermostats and Heat Regulators for General Use (see also class 36f and 45h), and Heat Retainers.

THERMOMETERS AND PYROMETERS (the latter principally in gr. 3-11). (Gr. 1-11.)

1. Heat-measuring devices which depend upon the expansion of liquid bodies without maximum or minimum determination (liquid thermometers).
2. Heat-measuring devices which depend upon the expansion of liquid bodies with maximum and minimum determination (maximum and minimum thermometers).
3. Heat-measuring devices which depend upon the expansion of a unitary solid body.
4. Heat-measuring devices which depend upon the differential expansion of solid bodies.
5. Heat-measuring devices which depend upon the expansion of a gas or vapor with the displacement of a column of liquid (e. g., air thermometers).
6. Heat-measuring devices which depend upon the expansion of a gas or vapor with tubular springs or expansion chambers.
7. Heat-measuring devices depending upon the change in electrical resistance, including that resulting from radiation of heat (electric thermometers).

## 42i—Continued.

8. Heat-measuring devices depending upon the change in thermo-electric tension between different bodies, including that resulting from radiation of heat (thermo-electric thermometers).
9. Heat-measuring devices depending upon measurement of the visible radiation of a heated body (optical pyrometers).
10. Heat-measuring devices depending upon the change in the physical condition of a body (from solid to liquid, etc.).
11. Heat-measuring devices depending upon the measurement of the differences in pressure or temperature of gases and liquids before entrance into and after exit from the heated space.
12. Heat-retaining receptacles without automatic regulation (cf. 34l, 12; 42l, 13; 82a, 5), heat retainers with automatic regulation, gr. 13 to 15.

HEAT REGULATORS. (Gr. 13-15.) (Cf. 24i, 2; thermostatic regulators for heat-regulating plants in buildings, 36f; heat regulating by the adjustment of ventilating valves, ventilators; etc., 36d.)

13. Heat regulators depending upon the expansion of solid bodies.
14. Heat regulators depending upon the expansion of liquid bodies.
15. Heat regulators depending upon the heating of gases or vapors.

CALORIMETERS. (Gr. 16, 17.)

16. Instruments for measuring the heating value of fuels.
17. Instruments for measuring the heat content of heated bodies, also of steam.
18. Apparatus for producing high temperatures by means of solar radiation. (Utilization of the heat of the sun for producing power, 46d, 11.)
19. Hygrometers. (Regulation of humidity, 36d, 1, 12, 13.)
20. Meteorological instruments (thermometers, gr. 1-8; barometers, 42l, 14, 15; devices for measuring wind pressure, 42k, 5; devices for measuring electricity, 21e, 5 and 11) and instruments for determining a plurality of physical conditions.

42k. Force Measures, Including Dynamometers, Manometers (telemetric devices, class 74b), Work Indicators, Strength Testers, Testing Machines, Leak Detectors.

DYNAMOMETERS OR MEASURERS OF FORCE. (Gr. 1-7.)

1. Transmission dynamometers.
2. Brake dynamometers.
3. Fluid dynamometers.
4. Devices for measuring draft and pressure of fluids and gases in conduits and tubes (in furnaces, ventilating plants, etc.).
5. Measures of wind pressure or anemometers.
6. Dynamometers for amusement purposes. (Cf. 77a, 5, 7-9.)
7. Miscellaneous dynamometers, exclusive of gr. 1 to 6 (e. g., devices for measuring axial thrust, measuring of gas pressure in ordnance).

MANOMETERS OR PRESSURE GAUGES. (Gr. 8-14.)

8. Bourdon type gauges.
9. Plate-spring pressure gauges (diaphragm and membrane).



**42k—Continued.**

10. Piston manometers.
11. Fluid, air, and float manometers.
12. Differential, registering, and double manometers, etc.
13. Safety devices for manometers.
14. Miscellaneous elements of manometers.

**INDICATORS OR OPERAMETERS. (Gr. 15-19.)**

15. Indicators with exterior springs.
16. Indicators with interior springs.
17. Optical indicators
18. Miscellaneous indicators, exclusive of gr. 15-17.
19. Miscellaneous apparatus in connection with indicators.

**STRENGTH TESTERS AND TESTING MACHINES. (Gr. 20-29.)**

20. Testers for elongation, tensile strength, and compressive strength.
21. Strength-testing machines.
22. Testers for breaking strain (thread and chain testers)
23. Testers of hardness, e. g., for steel balls or rails (Cf. 42i, 13.)
24. Elasticity testers and testers for the temporary and permanent changes of form and size, e. g., for rubber, wire cables, or leather.
25. Testers for rigidity (lateral breaking strain due to axial compression).
26. Devices for measuring deflection for beams, rails, bridges, etc.
27. Measurement of resistance to twisting strains.
28. Strength testers for cement, stone, and the like
29. Testers for miscellaneous purposes, e. g., for the supporting capacity of foundations, for journal friction, wear of materials, etc.

**LEAK DETECTORS. (Gr. 30-31.) (Density testers, 42i, 1, 2.)**

30. Leak detectors for hollow objects, as pipes, casks, cans, bottles, and hose.
31. Leak detectors for various purposes, exclusive of gr. 30.

**42l. Testing and Laboratory Apparatus for Chemical and Physical Purposes, Barometers, Mercury Air Pumps, and Samplers. (Instruments for measuring the calorific value of fuels, 42i, 16.)****TESTING APPARATUS FOR CHEMICAL AND PHYSICAL PURPOSES IN GENERAL. (Gr. 1-4.)**

1. Apparatus for determining the density of solids and liquids.
2. Apparatus for determining the density of gases and vapors.
3. Apparatus for the analysis of solids and fluids, including pipettes and burettes.
4. Apparatus for gas analysis, including sampling. (Determining density, gr. 2.)

**TESTING APPARATUS FOR SPECIAL CHEMICAL AND PHYSICAL PURPOSES. (Gr. 5-12.)**

5. Testing milk and other dairy products, exclusive of centrifugal machines, gr. 6.
6. Centrifugal machines for testing milk and other liquids.
7. Testing apparatus for lubricants, and viscous bodies (oil testers, viscosimeters, and the like).
8. Apparatus for determining the temperature of ignition of petroleum and other fuels.

**42l—Continued.**

9. Testing apparatus for grain, seeds, fruits, and the like. (Samplers, gr. 17; measuring devices for seeds, 42e, 27).
10. Egg testing.
11. Measuring and registering apparatus for spirits for excise purposes.
12. Measuring and registering apparatus for breweries and sugar plants for excise purposes.

13. Miscellaneous testing and laboratory apparatus, e. g., testers for the hardness of meat and the like (testers of hardness in general, 42k, 23), desiccators, stands or holders for physical and chemical testing apparatus, and the like (cf. 12g, 1; 42c, 1; 42i, 12).

**BAROMETERS. (Gr. 14-15.)**

14. Fluid barometers.
15. Aneroid barometers.

16. Air pumps for laboratory use, especially mercury pumps.

**SAMPLERS. (Gr. 17-18.) (Cf. gr. 4.)**

17. Samplers for solid bodies.
18. Samplers for fluid bodies. (Measures of volume, 42c.)

**42m. Calculating Instruments, Including Divided Rules, Slide Rules, Disk Calculators, Calculating Tables, Calculating Machines (abaci under n), also Calculating Mechanism for Cash Registers.****ADDING MACHINES WITHOUT PRINTING MECHANISM. (Gr. 1-4.)**

1. Adding machines without printing mechanism with one set of keys.
2. Same, with plurality of sets of keys.
3. Same, with directly adjustable number disks.
4. Miscellaneous adding machines without printing mechanism.

**ADDING MACHINES WITH PRINTING MECHANISM. (Gr. 5-6.)**

5. Adding machines with printing mechanism with one set of keys.
6. Same, with a plurality of sets of keys; also those without keys.

**CALCULATING MACHINES. (Gr. 7-9.)**

7. Calculating machines with adjustable teeth.
8. Electric calculating machines.
9. Miscellaneous calculating machines, exclusive of gr. 7 and 8.

10. Calculating apparatus for typewriters.

**ELEMENTS OF CALCULATING MACHINES. (Gr. 11-16.)**

11. Mechanism for carrying tens.
12. Zero setting mechanism.
13. Driving mechanism.
14. Ratchet mechanism.

**42m—Continued.**

15. Printing mechanism.
16. Miscellaneous elements.
17. Slide rules and other logarithmic calculating apparatus.
18. Calculating tables and multiplication tables.
19. Calculating apparatus for computing interest and wages.
20. Miscellaneous calculating apparatus, exclusive of gr. 1-19.

**42n. Educational Appliances for Teaching Reading, Writing, and Arithmetic, Writing for the Blind, Orreries, Globes, Maps, means for Teaching Topography and the Determination of Time, also for Natural Sciences, Including Natural Science Collections (preservation, class 45 l), Calendars, (calendar clocks and shiftable calendars, 83a; calendar pads, 11e), Time-Tables, Cryptography.**

**ELEMENTARY EDUCATIONAL APPLIANCES. (Gr. 1-6.)**

1. Means for teaching reading. (Cf. gr. 5.)
2. Means for teaching writing (exclusive of writing for the blind, cf. 15g, 19; 70d, 13).
3. Abaci.
4. Miscellaneous devices for teaching arithmetic, exclusive of group 3.
5. Devices for teaching both reading and arithmetic. (Cf. gr. 1, 3, and 4.)
6. Miscellaneous elementary educational appliances, exclusive of gr. 1-5.

**GEOGRAPHICAL EDUCATIONAL APPLIANCES. (Gr. 7-9.)**

7. Orreries and tellurions.
8. Globes.
9. Maps. (Map holders, 34i, 9.)
10. Educational appliances for descriptive natural sciences, e. g., natural science collections. (Preservation 45 l, 1.)
11. Miscellaneous physical educational appliances and models.
12. Calendars. (Cf. 11e, 6; 83a, 78.)
13. Time-tables. (Station indicators, 20i, 25-27.)
14. Cryptography. (Cf. 15g, 20.)

**42o. Speed Measuring Devices.** (Current meters, 42c, e.)

1. Speed measuring devices, with pumps.
2. Same, with electric generators and similar motors.
3. Same, with friction wheel gearing and clockwork.
4. Same, with intermittently connected indicators.
5. Same, with centrifugal governors.
6. Same, with intermittently driven pendulums.
7. Same, with fluid mirrors adjusted by centrifugal force.
8. Measurement of speed by direct determination of time and distance.
9. Logs.
10. Graphic speed measuring devices.
11. Speed measuring devices with electric contacts.
12. Indicating apparatus for speed measuring devices. (Telemetric, 74b, 6.)
13. Miscellaneous devices for measuring speed exclusive of gr. 1 to 11. (Frequency meters, 21e, 7.) Resonance apparatus.

**42p. Counting Apparatus, Including Rotary Counters, Distance Measuring Devices, Fare Indicators.**

1. Roller counting mechanism, including rotary counters.

**42p—Continued.**

2. Disk counting mechanism, including rotary counters.
3. Electric connections for counting mechanism, including rotary counters.
4. Mechanical shifting mechanism for counting apparatus.
5. Counting mechanism for loads (for hoisting machinery, etc.).
6. Counting mechanism for turnstiles.
7. Counting mechanism for measuring rules and the like.
8. Counting mechanism in combination with devices for printing results. (Cf. 43a, 14.)
9. Counting mechanism for various objects, exclusive of gr. 5 to 8.
10. Special elements of counting mechanism. (Cf. gr. 1-9.)
11. Distance-measuring devices and place indicators driven by the same.
12. Travel-registering devices, fare indicators in general. [Taximeters.] (Cf. gr. 13; 47b, 32.)
13. Automatic setting devices for fare indicators. [Taximeters.]

**CLASS 43.—REGISTERING APPARATUS AND CHECK CONTROLLED APPARATUS.**

**43a. Registering Apparatus, Including Cash Registers, Fare Registers, Workmen's, Watchmen's, and Ticket Recorders, e. g. Punches, with Numbering Apparatus, and Ticket Cases, Registers for Races, for Time of Flight and for Games, Voting Apparatus, Coin Sorters, Change Makers Coin Testers, and Coin Holders.**

**CASH REGISTERS. (Gr. 1-14.) (Cf. 42m.)**

1. Cash registers with parallel keys or key levers.
2. Cash registers with cylindrical keyboards.
3. Cash registers with operating slides, pointers, or disks.
4. Cash registers employing ball checks.
5. Electric cash registers.
6. Cash registers which position the registering mechanism by means of the coin deposited.
7. Cash registers with endless chains or belts for exhibiting the coin or check and transferring it to the cash receptacle. (Cf. gr. 11.)
8. Cash registers with compartment cylinders for exhibiting the coin or check and transferring it to the cash receptacle. (Cf. gr. 11.)
9. Cash registers with flaps or slides for exhibiting the coin or check and transferring it to the cash receptacle. (Cf. gr. 11.)
10. Cash registers, including means for printing a recording strip.
11. Cash registers, including checking means involving the use of checks or other indications of value. (Cf. gr. 7-9.)
12. Miscellaneous cash registers, exclusive of gr. 1 to 11.
13. Elements of cash registers.
14. Registering stamps with adding and printing mechanism. (Cf. 42p, 8.)

**COIN CHANGERS, SORTERS, TESTERS, AND THE LIKE. (Gr. 15-19.)**

15. Coin counting and changing apparatus, including that combined with cash registers.
16. Coin-sorting apparatus, including that combined with cash registers. (Cf. gr. 18, 19.)
17. Coin cases, wage receptacles with closures cooperating with the wage check.
18. Coin counting and packing apparatus.
19. Coin testers. (Cf. gr. 15, 16; 43b, 2.)



## 43a—Continued.

FARE REGISTERS, ALSO REGISTERS FOR TRAIN TICKETS, ENTRANCE TICKETS, AND LOTTERY TICKETS, AND THE LIKE. (Gr. 20-24.)

20. Train ticket punching, stamping, registering, and dispensing apparatus.
21. Train ticket punches and stamps combined with counting mechanism. (Other stamps, 15h, 1.)
22. Dispensing cases and containers for train tickets, lottery tickets, and the like.
23. Fare-registering mechanism.
24. Stamping and registering machines for automatically dispensing messages and the like; prepaying apparatus. (Cf. 15h, 4; 43b, 54.)

WORKMEN'S AND WATCHMEN'S RECORDERS. (Gr. 25-31.)

25. Workmen's time recording apparatus with mechanism for assorting checks according to the time of deposit.
26. Workmen's time recording apparatus with mechanism for producing time entries by means of the checks.
27. Workmen's time recording apparatus with registering bands, bows or disks, operated by clockwork, for receiving individual records in handwriting or made by perforating or printing bars or by stamp keys.
28. Workmen's time-recording apparatus with typewriting mechanism operated by clockwork for producing time records upon the record strip or card.
29. Miscellaneous workmen's time recorders, exclusive of gr. 25 to 28.
30. Watchmen's recording clocks. (Cf. gr. 29.)
31. Electrical recording apparatus for watchmen. (Cf. gr. 30.)

MISCELLANEOUS TIME-RECORDING MECHANISM. (Gr. 32 to 36.)

32. Devices for measuring the time of a race.
33. Starting barriers for horse races.
34. Devices for measuring time of flight [for carrier pigeons].
35. Time and date stamps in general.
36. Miscellaneous time-recording mechanism, exclusive of gr. 25 to 35, 37, and 38.

REGISTERING MECHANISM FOR GAMES, LOTTERY TICKETS, BALLOTS, AND VOTES. (Gr. 37-40.)

37. Time-registering mechanism for billiards. (Cf. 77c, 16.)
38. Time-registering apparatus for other games. (Cf. 77d, 5.)
39. Voting machines, ballot boxes, and other voting apparatus.
40. Apparatus for mechanically drawing lots and determining lotteries and for mixing and distributing ballot or lottery balls or checks.

41. Assorting, registering, and tabulating machines for statistical computations and the like.
42. Registering or checking mechanism of various kinds, exclusive of gr. 1-41, including that for hoisting cars.

43b. Coin-Controlled Apparatus. (See also class 51d and 57a.)

## b—Continued.

COIN CHUTES AND COIN-CONTROLLED OPERATIONS FOR COIN-CONTROLLED APPARATUS. (Gr. 1-14.)

1. Coin slots.
2. Coin testers. (Cf. 43a, 19.)
3. Devices for returning the deposited coin upon stoppage of the apparatus.
4. Means for exhibiting the coin.
5. Locking and releasing mechanism in which the coin serves as the motive power.
7. Locking and releasing mechanism in which the coin releases a motive power.
8. Locking and releasing mechanism in which the coin connects a hand-operated motor mechanism.
9. Locking and releasing mechanism in which the coin causes the release of a hand-operated driving mechanism.
10. Special arrangement of parts relating to the locking and releasing mechanism.
11. Arrangements for the operation of coin-controlled apparatus by several coins.
12. Mechanism for the simultaneous operation of a plurality of coin-controlled mechanisms.
13. Mechanism for operating some one part of a coin-controlled apparatus or of several coin-controlled mechanisms.
14. Money boxes for coin-controlled apparatus.

APPURTENANCES FOR COIN-CONTROLLED APPARATUS. (Gr. 15-16.)

15. Mechanism in connection with coin-controlled apparatus for the delivery of checks and change.
16. Special arrangements in connection with coin-controlled apparatus which cooperate especially with the dispensing function—e. g., signal devices and the like.

AUTOMATIC VENDERS. (Gr. 17 to 33.)

17. Automatic venders which deliver parcels from large receptacles.
18. Automatic venders which deliver parcels from compartments of a fixed receptacle.
19. Same from compartments of a rotary drum.
20. Same from conveyer belts, chains, and screws.
21. Same from a single vertical stack.
22. Same from a vertical cross-shaped stack.
23. Same from a plurality of vertical stacks.
24. Same from a horizontal or oblique or swinging stack.
25. Automatic venders of granular materials.
26. Automatic venders of separate leaf-shaped articles.
27. Automatic venders which cut off parts from a strip or cut out from a sheet.
28. Coin-controlled liquor dispensers without a vessel for preliminary measurement.
29. Coin-controlled liquor dispensers with a receptacle for preliminary measurement.
30. Coin-controlled perfume dispensers and sprayers.
31. Automatic venders for water and gas for house use, with valve lock.
32. Automatic venders for water and gas for house use, with gearing lock.
33. Automatic venders for electricity.

AUTOMATIC DEVICES FOR RENDERING SERVICES. (Gr. 34-53.)

34. Apparatus for renting optical instruments.
35. Coin-controlled exhibiting apparatus with a series of movable pictures.
36. Coin-controlled exhibiting apparatus in combination with automatic venders.
37. Miscellaneous coin-controlled exhibiting apparatus, exclusive of gr. 35 and 36.

## 43b—Continued.

38. Coin-controlled music players and alarm clocks. (Cf. 51d, 20.)
39. Coin-controlled talking machines.
40. Coin-controlled game apparatus in which the result depends upon chance.
41. Coin-controlled game apparatus in which the result depends upon skill.
42. Coin-controlled gymnastic apparatus and the like.
43. Coin-controlled lung testers. (Cf. 30a, 4.)
44. Coin-controlled dynamometers.
45. Coin-controlled weighing apparatus without printing mechanism.
46. Coin-controlled weighing apparatus in combination with printing mechanism.
47. Coin-controlled measuring instruments for special purposes (measurement of size, testing the eyesight and the like).
48. Coin-controlled electrifying apparatus and Roentgen ray apparatus.
49. Automatic devices for renting articles, e. g., newspapers and directories.
50. Automatic devices for renting pumps (e. g., bicycle pumps).
51. Coin-controlled locking hooks. (Cf. 68a, 108, 109.)
52. Coin-controlled apparatus for dispensing toilet conveniences (e. g., towels and the like)
53. Automatic apparatus for renting seats and foot-stools.

## MISCELLANEOUS COIN-CONTROLLED APPARATUS. (Gr. 54-57.)

54. Coin-controlled letter boxes, printing and stamping apparatus.
55. Coin-controlled devices for opening locks and doors, also turnstiles. (Cf. 68a, 24.)
56. Coin-controlled mechanism for receiving and delivering newspaper items, notices, insurance cards, and the like.
57. Coin-controlled calendars and savings boxes.

## CLASS 44.—FANCY HARDWARE, SMOKING, SNUFFING, AND CHEWING APPLIANCES.

## 44a. Fancy Hardware, Including Buttons, Hat, Hair, and Scarf Pins, Buckles, Jewelry, Savings Boxes, etc.

## MISCELLANEOUS KINDS OF SIMPLE BUTTONS, INCLUDING FABRIC BUTTONS, TUFT BUTTONS, ORNAMENTAL BUTTONS, AND THE LIKE. (Gr. 1-5.)

1. Manufacture of fabric buttons, especially wash buttons. (Cf. gr. 2 and 3; covering buttons, 25c, 1.)
2. Fabric buttons with replaceable coverings.
3. Tuft buttons.
4. Ornamental buttons.
5. Buttons with elastic parts.

## BUTTON FASTENINGS AND BUTTONS DISTINGUISHED BY THE NATURE OF THE FASTENING. (Gr. 6-14.)

6. Buttons with thread fastenings.
7. Buttons with needle or wire fastenings.
8. Screw buttons.
9. Button fastenings, comprising turned-over edges.
10. Button fastenings, including prongs, disks, or points in general. (Cf. gr. 11.)
11. Button fastenings, including prongs, disks, or points in which the point is held by spring action. (Cf. gr. 10.)
12. Button fastenings, including sliding or rotary feet. (Cf. gr. 15 and 18.)
13. Button fastenings, including points which are guided into openings and then directed in slots.

## 44a—Continued.

14. Button fastenings, including clamps, also emergency buttons.

## BUTTONS FOR COLLARS, CUFFS, AND THE LIKE. (Gr. 15-18.)

15. Collar buttons in general. (Cf. 3b, 16.)
16. Hinged leaf buttons with a single hinged member. (Cf. gr. 17.)
17. Hinged leaf buttons with a plurality of hinged members. (Cf. gr. 16.)
18. Cuff buttons in general. (Cf. gr. 10-14.)

19. Miscellaneous features in connection with buttons.
20. Button cards. (Cf. 54g, 16.)

## HATPINS, HAIRPINS, SCARFPINS, SAFETY PINS, AND THE LIKE. (Gr. 21-26.) (Manufacture of pins, 7c.)

21. Hatpins and means for fastening the same. (Cf. gr. 23; 3b, 25.)
22. Hairpins. (Cf. 3b, 25; 33c, 4.)
23. Scarfpins and means for fastening the same. (Cf. gr. 21, 22, 24.)
24. Safety pins. (Cf. gr. 32; manufacture, 7c, 1.)
25. Pins for special purposes exclusive of gr. 21-24 (Cf. gr. 32.)
26. Machines for fusing heads upon pins

## BUCKLES AND HOOKS. (Gr. 27-31.) (Clothing hooks and eyes, 3c, 1.)

27. Buckles without tongues. (Cf. 3c; 56a, 2.)
28. Tongue buckles. (Cf. 3c; 56a, 2.)
29. Buckles with special holding mechanism. (Cf. 56a, 2.)
30. Special holding devices as a substitute for buckles. (Cf. 33d, 13.)
31. Hooks for articles of jewelry. (Manufacture, 7c, 19; spring hooks, 47d, 16.)

## JEWELRY AND THE LIKE. (Gr. 32-41.)

32. Brooches and pins for brooches. (Cf. gr. 24.)
33. Bracelets and bracelet fastenings. (Cf. gr. 35-37.)
34. Earrings and earpiereers.
35. Finger rings. (Cf. gr. 33.)
36. Key rings and watch chain fastenings.
37. Fastenings for articles of jewelry. (Cf. gr. 33.)
38. Articles of jewelry which are convertible, e. g., finger rings convertible into two earrings.
39. Miscellaneous articles of jewelry, as chains, etc. (Chain making, 49h.)
40. Gem setting (e. g., precious stones.)
41. Devices to prevent theft of watches and chains (pocket fastenings, 3c, 4). (Cf. 33b, 12.)

42. Savings boxes.
43. Miscellaneous fancy hardware, exclusive of gr. 1-42.

## 44b. Appliances for Use in Connection with Smoking, Snuffing, and Chewing, as Cigar and Cigarette Lighters, Tobacco Boxes, etc.

## PIPES AND APPURTENANCES. (Gr. 1-11.) (Smoking appliances on canes, 33a, 12; for bee keepers, 45h, 16.)

1. Separable pipes.
2. Pipes with double-walled tubes.
3. Pipes including means for cooling the smoke, e. g., drawing the smoke through zigzag passages.



## 44b—Continued.

4. Pipes with absorbent linings and arrangements for purifying the smoke, exclusive of gr. 3 and 6.
5. Pipes in which the tobacco is burned from below.
6. Pipes of the narghile type.
7. Pipes including means for feeding the tobacco.
8. Pipe covers and appurtenances
9. Means for cleaning pipes.
10. Tobacco tampers.
11. Devices in connection with smoking appliances for producing smoke images and rings, also for making images visible by means of tobacco smoke. (Cf. 77f, 29.)

## SMOKING APPLIANCES FOR CIGARS AND CIGARETTES. (Gr. 12-21.)

12. Cigar and cigarette holders [mouth pieces]. (Cf. 79b.)
13. Safety sleeves and extinguishers for cigars.
14. Cigar lighters. (Cf. gr. 31, 34.)
15. Cigar supports [for holding the cigar while smoking].
16. Cigar cutters (cutters per se, and cutters in combination with match holders, etc.).
17. Cigar slitters and perforators.
18. Cigar and cigarette cases, also receptacles for house use. (Cigar boxes, 81c, 1, 4; box making, 38d, 2; cigar case closures, gr. 30; cf. 33b, 1 to 4, 10.)
19. Ash cups (ash cups, per se, and those combined with match holders, cigar rests, lighters and the like).
20. Tobacco receptacles for smoking and chewing tobacco and snuff.
21. Miscellaneous smoking, snuffing, and chewing appliances.

## LIGHTERS, WITH THE EXCEPTION OF CHEMICAL AND PNEUMATIC LIGHTERS ESPECIALLY MATCH RECEPTACLES AND THE LIKE. (Gr. 22 to 34.) (Cf. 78b, e and f.)

22. Match receptacles and boxes in general.
23. Match dispensers without means for lighting the matches. (Cf. gr. 24, 25.)
24. Devices for tendering the matches in a horizontal or inclined position. (Cf. gr. 23, 25.)
25. Match dispensers with means for automatically lighting the matches. (Cf. gr. 23, 24.)
26. Match receptacles with means for storing the matches separately.
27. Match receptacles with means for protection against the wind, also match safes which are not easily accessible for children.
28. Arrangements of friction surfaces for matches and special devices for lighting matches. (Cf. 78b, 2-4.)
29. Holders for match boxes and match box cases, also lighting mechanism to be supported on the wall.
30. Closures for match receptacles, also for cigar cases and the like. (Cf. gr. 18; 11e, 2; 33b, 11, 12.)
31. Lighters including match strips, flints, cerium-iron alloys and the like. (Cf. 78e, 4.)
32. Lighters which operate by the opening of the cover.
33. Lighters with loose pellets, and platinum black lighters.
34. Electric lighters. (Cf. 78e, 4.)

## CLASS 45.—AGRICULTURE AND FORESTRY, GARDENING, WINE AND FRUIT CULTURE, DAIRY, ANIMAL HUSBANDRY, FISHING, CAPTURE AND EXTERMINATION OF ANIMALS, FARRIERY.

## 45a. Cultivation of the Soil.

## HAND IMPLEMENTS FOR SOIL CULTIVATION. (Gr. 1-5.)

1. Hoes. (Manufacture of hoes from sheet metal, 7c, 41; by rolling, 7f, 3.)

## 45a—Continued.

2. Weed-pulling implements.
3. Destruction of weeds by means of steam, fire, and the like.
4. Shovels and spades. (Cf. 7c, 41; 7f, 3; 69, 23.)
5. Miscellaneous hand implements for cultivating the soil, also attachments which are adapted for a plurality of such tools.

## PLOWS. (Gr. 6-24.) (Rolling of plowshares, 7f, 3.)

6. Parts of plows. (Cf. 45a, 21, 22.)
7. Plows with trucks for the front end of the beam.
8. Adjusting devices for swing plows.
9. Adjusting and lifting devices for wheel plows in general.
10. Adjusting and lifting devices for wheel plows of the Ventzki type.
11. Subsoil plows.
12. Plows with rotary shares and moldboards.
13. Invertible plows for single furrow [side hill plows which turn upside down].
14. Invertible gang plows.
15. Reversible plows [turn around at the end of furrow].
16. Plows with means for turning under manure, and implements for preliminary handling of manure for plowing under.
17. Ridge plows
18. Vineyard plows.
19. Shovel plows and weeding implements with means for cultivating the soil.
20. Ditching plows and drainage plows.
21. Motor plows in which the motor and plow are combined.
22. Motor plows in which the motor and plow are separate.
23. Electric plows.
24. Tipping plows [double reversible plows arranged to tilt about a central transverse axis].

## HARROWS. (Gr. 25-27.)

25. Harrows with rigid frames.
26. Jointed and sectional harrows.
27. Rotary harrows.

## SOIL CULTIVATING TOOLS AND MACHINES, EXCLUSIVE OF HAND TOOLS, PLOWS, AND HOES. (Gr. 28 to 34.)

28. Cultivators [wheel-plow type].
29. Sod breakers.
30. Drags and levelers for soil cultivation.
31. Stone pickers.
32. Rollers for soil cultivation.
33. Implements for meadow cultivation.
34. Digging machines.

## MACHINE HOES. (Gr. 35 to 38.)

35. Hoeing machines in general.
36. Steering devices for hoeing machines, fertilizer distributing machines and drills.
37. Movable hoeing blades.
38. Rotary hoeing blades.

39. Drainage and irrigation (Drainage plows, gr. 20).

## 45b. Seeding and Fertilizing.

1. Preliminary treatment of seed, including germinating apparatus.
2. Storage places for manure and implements for handling manure.

**45b—Continued.**

3. Hand sowing and fertilizing apparatus.
4. Seeding plows.
5. Distributing apparatus for liquid manure (manure tanks and sprinkling wagons. (Cf. 45f, 22.)
6. Apparatus for conveying and scattering stable manure.
7. Hand tools for making and covering furrows and holes for planting. (Cf. gr. 9.)
8. Markers for sowing and fertilizing.
9. Dibbles.

**SEEDERS, INCLUDING DRILLS. (Gr. 10 to 17.) (Steering, 45a, 36.)**

10. Seeding, including seeders and drills in general.
11. Parts of seeders for conducting and depositing seed.
12. Means for shifting the seed box on seeders and drills.
13. Seeders with feeding wheels (delivering under the seeder shaft), change-over devices for over and under delivery.
14. Seeders with spoon wheels.
15. Seeders with bucket wheels (for delivery above the seeder shaft).
16. Seeders with miscellaneous distributing devices, exclusive of gr. 13 to 15, e. g., brushes, Rheidt disks, screws, slides, and suction devices.
17. Drop drills [corn planters, etc.].

**POTATO PLANTERS. (Gr. 18-21.)**

18. Potato planters in general.
19. Potato planters, including conveyer belts or bucket wheels.
20. Potato planters, including piercing or grasping devices.
21. Potato planters with miscellaneous distributing mechanism, exclusive of gr. 19 and 20.

22. Miscellaneous planting machines, e. g., for sugar cane, for trees; machines for fecundating blossoms.

**FERTILIZER DISTRIBUTERS. (Gr. 23-30.)**

23. Distribution of fertilizers, and fertilizer machines in general.
24. Fertilizer distributors with a simple distributing slot.
25. Fertilizer-distributing machines with a pusher or stirrer in the delivery slot.
26. Fertilizer-distributing machines with reciprocating slides.
27. Fertilizer-distributing machines with movable receptacles, e. g., Schloer machines.
28. Fertilizer-distributing machines which lift the fertilizer out of the receptacle, e. g., by means of rollers.
29. Fertilizer-distributing machines which draw the fertilizer out of the receptacle, e. g., by means of hooked chains.
30. Fertilizer-scattering and seeding machines with centrifugal wheels.

**45c. Harvesting.****HAND IMPLEMENTS FOR HARVESTING. (Gr. 1-5.)**

1. Rakes for harvesting.
2. Forks, e. g., hayforks, straw forks.
3. Scythes and sickles, special forms. (Making scythes and sickles from sheet metal, 7c, 42, by rolling, 7f, 5.)

**45c—Continued.**

4. Sharpening machines for hammering out scythes and sickles. (Whetting implements, 67c, 4.)
5. Hand implements for lifting beets, potatoes, and other root crops.

**MACHINES FOR DIGGING POTATOES AND OTHER ROOT CROPS. (Gr. 6-17.)**

6. Potato-digging plows, per se.
7. Potato-digging machines with screens, without conveying mechanism.
8. Potato-digging machines with screens and conveyer belts or wheels arranged above the screen.
9. Potato-digging machines with screens and conveyer mechanism other than that specified in gr. 8.
10. Potato-digging machines with special conveying and cleaning apparatus, exclusive of gr. 6 to 9, e. g., conveying apparatus of the straw-shaker type, eccentric disks, or rakes.
11. Potato-digging machines with elevating conveyers.
12. Potato-digging machines with cylindrical screens.
13. Potato-digging machines with centrifugal wheels of the Münster type [side delivery, horizontal axis].
14. Potato-digging machines with centrifugal wheels arranged on a vertical or oblique axis.
15. Potato-digging machines with centrifugal wheels delivering to the rear.
16. Potato-digging machines of special constructions exclusive of groups 6 to 15.
17. Miscellaneous mechanism for potato-digging machines.

18. Beet-lifting machines. (Cf. gr. 5.)
19. Toppers for beet lifters

**HARVESTERS. (Gr. 20-34.)**

20. Harvesters with reciprocating knives without delivering mechanism.
21. Harvesters with delivering mechanism (including those with motor drive).
22. Harvesters with rotary or traveling knives.
23. Grain lifters, devices on mowing machines for protecting animals.
24. Mowers with attachments for delivery of grain.
25. Lawn mowers.
26. Lawn-sweeping machines.
27. Miscellaneous harvesters, e. g., for clover, flax pullers, headers; appliances for removing growth from watercourses.
28. Harvesters combined with thrashing machines.
29. Self-binding harvesters in general.
30. Knotters for self-binders.
31. Packers for self-binders.
32. Elevators for self-binders.
33. Frame parts for harvesters—Cutter and finger bars, knives, and fingers.
34. Weeding machines, e. g., for wild mustard.

**HAY-HARVESTING APPLIANCES. (Gr. 35-37.)**

35. Horse rakes.
36. Hay turners.
37. Hay loaders combined with rakes; also bundle formers with gathering apparatus. (Cf. gr. 29; 45c, 30.)

**45d. Horse-Powers, Including Treadmills.**

1. Horse-powers in general.
2. Draft arrangements, equalizers, hitching, and whipping apparatus for horse-powers. (Cf. 63b, 21, 23, 42.)



## 45d—Continued.

3. Safety devices for horse-powers.
4. Transmission mechanism and couplings for horse-powers.
5. Treadmills. (Cf. 46c, 5.)

## 45e. Treatment of Harvested Produce, Including Hay and Straw Presses, Fruit Seeders, Vegetable and Fruit Grinding, Cutting, and Peeling Machines for Treatment in Bulk. (For single fruits, 34b.)

1. Hand tools, also independent machines, for forming and binding straw bundles (cf. 45c, 37), bands for bundles, flails, stack cutters, straw knives

## THRASHING MACHINES. (Gr. 2-11.)

2. Complete machines.
3. Parts of thrashing machines, e. g., gearing, frames, braking apparatus, etc.
  1. Thrashing machines of special constructions.
5. Separation of the bundles behind the machine, including straw binders behind thrashing machines, and thrashing machines with built-in presses and baling apparatus.
6. Adjustment of the concave in thrashing machines.
7. Straw shakers for thrashing machines.
8. Thrashing ribs for thrashing machine cylinders.
9. Teeth for thrashing machine cylinders.
10. Safety devices for thrashing machines, e. g., feeders.
11. Stackers for thrashing machines.

## SEPARATING AND CLEANING GRAIN AND OTHER AGRICULTURAL PRODUCE. (Gr. 12-22.)

12. Separating and cleaning machines with flat screens and fans (fanning mills).
13. Separating and cleaning machines with flat screens without fans.
14. Flat screens alone for cleaning and separating grain (hand sieves and winnowers).
15. Round screens for cleaning and separating grain.
16. Separating drums or weed-seed extractors for cleaning and separating grain.
17. Endless belts for separating and cleaning grain.
18. Centrifugal separators for grain.
19. Stone removing apparatus.
20. Cleaning and separating apparatus for special products (potatoes, coffee, etc.), or of special constructions, removing dust from grain and other food products.
21. De-hullers (cf. 50a, 3-7;) hop pickers, destroying the germinating power of grain and applying distinguishing characteristics to grain for special purposes. (Cf. 45l, 1; 53c, 5; 53g, 4.)
22. Agricultural washers for grain, potatoes, root crops, for feed and the like (washing and drying apparatus for grain, 50a, 2; washers for sugar beets and potatoes for use in manufacturing establishments, 89a, 1).

## HAY AND STRAW PRESSES. (Gr. 23-28.)

23. Hay and straw presses in general. (Cf. 58b, 14.)
24. Feeding the material to hay and straw presses.
25. Feeding the binders to hay and straw presses.
26. Automatic binding mechanism.
27. Division blocks.
28. Endless belts, rolls, and rotary operation in connection with hay and straw presses.
29. Stacks, ricks, etc., for grain, straw, hay, and the like.
30. Loading and unloading apparatus, hay grapples. (Cf. 63b, 33; 89a, 3; hay loaders, 45c, 37.)

## 45e—Continued.

31. Agricultural vehicles, including farm wagons, grain and hay wagons and parts of the same.

## STRAW CUTTERS. (Gr. 32-34.)

32. Straw cutters in general (for litter, etc.).
33. Shifting mechanism and gearing for straw cutters.
34. Safety arrangements for straw cutters (feeders).

## CUTTING OR GRINDING MACHINES FOR TREATMENT OF VEGETABLES, FRUITS AND FEED IN BULK. (Gr. 35-39.) (Cf. 34b.)

35. Machines with rotary knives.
36. Machines with rotary drums.
37. Machines with oscillating and reciprocating knives.
38. Machines for cutting vegetables into cubes.
39. Grating machines for bulk treatment of vegetables.

## FRUIT SEEDERS FOR TREATMENT IN BULK. (Gr. 40-43.) (Fruit seeders for single fruits, 34b, 11.)

40. Seeders for soft fruits with hard seeds, e. g., for cherries.
41. Seeders for fruits with small seeds, e. g., for currants.
42. Seeders for fruits with soft seeds and hard shells, e. g., for palm nuts.
43. Seeders or shellers for produce with soft shells and soft seeds, e. g., green peas.

## VEGETABLE AND FRUIT PEELING MACHINES FOR HANDLING MATERIALS IN BULK. (Gr. 44-45.)

44. Peeling machines for potatoes and the like. (Cf. 34b, 7; 50a, 7.)
45. Peeling machines for asparagus. (Cf. 34b, 7.) Machines for stringing and cutting green beans.
46. Machines for stemming, piercing, and scraping fruits for preserving purposes.

## 45f. Gardening, Fruit, Wine, and Hop Culture, Forestry.

## GARDENING. (Gr. 1-4.)

1. Gardening and vegetable culture in general.
2. Grafting.
3. Name plates, cards, etc., for designating plants.
4. Miscellaneous appliances for gardening, including trimmers for the edges of lawns, gardeners' shears, dibbles, etc.

## FLORICULTURE. (Gr. 5-9.)

5. Flower culture, botany in general.
6. Utilization of flowers, e. g., bouquet-making apparatus.
7. Flower pots.
8. Supports for pot plants.
9. Conservatories and hothouses, forcing frames and plant shades.

## APPARATUS FOR PROTECTION AGAINST STORM, WIND, WILD ANIMALS, AND VERMIN. (Gr. 10, 11.)

10. Cloudshooting apparatus. (Storm cannon.)
11. Miscellaneous apparatus for protection against storm, wind, wild beasts, and vermin, exclusive of gr. 10, protection of plants from injury by gnawing.

## HOP AND VINEYARD CULTURE. (Gr. 12-13.)

12. Hop and vineyard culture in general.
13. Trellises for hops and vines, also for fruit.

## 44f—Continued.

## FRUIT CULTURE. (Gr. 14-16.) (Cf. gr. 13.)

14. Tree bands or clamps.
15. Stays and props for trees, also appliances for driving and pulling props.
16. Fruit-harvesting implements, e. g., fruit pickers.

## FORESTRY. (Gr. 17-18.)

17. Tree pullers, tree felling, transplanters, stump extractors.
18. Tree pruning shears and saws. (Cf. 69, 2.)

## IRRIGATING APPARATUS FOR GARDENS AND FIELDS. (Gr. 19-22.) (Drainage, 45a, 39.)

19. Portable irrigating apparatus.
20. Stationary irrigating apparatus (Root feeders, gr. 22.)
21. Watering cans and sprayers.
22. Root feeders, e. g., for watering and fertilizing trees. (Cf. 45b, 5.)

## 45g. Dairy, Mechanical Features. (Chemical features, class 53c.)

1. Dairy appliances in general, including apparatus for emulsifying milk.

## MILKING AND PRELIMINARY TREATMENT OF MILK. (Gr. 2-7.)

2. Mechanically driven milking machines.
3. Hydraulic and pneumatic milking machines.
4. Milk receptacles for dairy use.
5. Milk purifiers and aerators.
6. Milk heaters and coolers, including special manipulation of the milk. (Cf. 17e, f.)
7. Raising cream (emulsifying apparatus, group 1).

## MILK SEPARATORS, i. e., CENTRIFUGAL MACHINES. (Gr. 8-14.) (Cf. 82b.)

8. Vertical separators.
9. Horizontal separators.
10. Elements of separators (journal boxes, gearing, construction of the drum, and cleaning apparatus).
11. Dish-shaped inserts for milk separator drums.
12. Flat plates for the interior of separator drums (generally parallel to the axis).
13. Miscellaneous inserts for separator drums, exclusive of gr. 11 and 12.
14. Feeding and discharging the fluids in connection with separators, and cleaning milk separators.

## BUTTER MAKING. (Gr. 15-23.)

15. Butter (miscellaneous features in connection with extraction; preservation of butter by physical agencies, e. g., cold).
16. Churning apparatus combined with centrifugal machines.
17. Oscillating churns.
18. Miscellaneous churns, e. g., those for churning by the use of air.
19. Parts of churns, e. g., dashers.
20. Upright churns with rotary dashers.
21. Horizontal churns with rotary dashers (also rotary churns and butter makers).
22. Reciprocating dasher churns.
23. Butter workers. (Cf. 53h, 2.)

24. Cheese making, preserving, and shipping. (Cf. 53e, 6.)
25. Molding machines for butter and cheese.

## 45h. Animal Husbandry, Including Apparatus for Transporting Live Fish, Aquariums, and Fishing.

## ANIMAL HUSBANDRY IN GENERAL, ESPECIALLY CATTLE RAISING. (Gr. 1-11.)

1. Stable equipment, e. g., floors, uprights, feed racks.
2. Devices for fastening animals (bars, easily releasable chain fastenings, and the like).
3. Apparatus for releasing animals. (Cf. 56a, 23.)
4. Stock feeding.
5. Stock watering.
6. Sucking apparatus for young stock.
7. Marking animals.
8. Devices for grooming and caring for animals, e. g., curry combs and other grooming implements, tail holders, devices to prevent crib biting, protection against the sun and insects.
9. Taming or training animals, e. g., by nose rings, hobbles, also shackles and holding apparatus for restraining animals in general. (Shackling devices for special purposes, 30c, 5; 56a, 26; 66a, 4.)
10. Miscellaneous apparatus for animal husbandry, e. g., manure pouches and the like, dehorners, weaning apparatus.
11. Muzzles, lines, and collars for dogs and for stock.

## POULTRY CULTURE. (Gr. 12-14.)

12. Poultry culture in general (hen houses, nests, and the like).
13. Brooding apparatus for poultry. (Baby incubators, 30e, 13.)
14. Cages, including those for small birds, shipping crates for poultry (cf. 81c), automatic door openers, means for protection from insects.

## CULTURE OF WORMS, INSECTS, AND THE LIKE. (Gr. 15, 16.)

15. General appliances and apparatus for insect and worm culture, especially for bee culture.
16. Bee hives and appurtenances, also bee smokers.

## FISH CULTURE. APPARATUS FOR TRANSPORTATION OF LIVE FISH, AQUARIUMS, AND FISHING. (Gr. 17-23.)

17. Fish culture, culture of oysters, sponges, pearl-bearing mussels, and other shellfish.
18. Apparatus for transporting and storing live fish. (Cf. 65a, 7.)
19. Aquariums.
20. Fishing with nets, weirs, etc. (Cf. 45k, 9.)
21. Indicators for angling, devices for jerking on the line and the like.
22. Hooks and bait for angling (also manufacture of bait).
23. Rods and reels, etc., for angling.

## 45i. Farriery.

1. Solid horseshoes with nail holes.
2. Jointed horseshoes to be fastened with nails.
3. Hoof coverings or pads which do not require nails.
4. Hoof coverings of elastic materials (e. g., soft rubber, cork, springs, etc.).
5. Elastic inserts and soles for horseshoes.
6. Elastic inserts for channeled horseshoes.

## REMOVABLE CALKS. (Gr. 7-11.)

7. Screw calks.
8. Calks which are pushed into place.



## 45i—Continued.

9. Elastic calks.
10. Miscellaneous removable calks, exclusive of gr. 7-9.
11. Ice spurs for horseshoes. (Cf. 71b, 13.)

12. Two-part hoof coverings, including removable calk plates.
13. Horseshoers' tools and appliances.
14. Horseshoe nails.
15. Ox shoes.
16. Materials and apparatus for the care of hoofs (hoof cement and the like, hoof expanders, toe weights).

## 45k. Trapping; Appliances for the Extermination of Animals and Plants.

1. Methods and apparatus for catching and killing insects in general.
2. Insect catchers with adhesive surfaces.
3. Collection of insects, either for the purpose of destroying or preserving them.
4. Powder dusters and sprayers, apparatus for dispensing pellets and fumigators for exterminating animals and plants. (Cf. 30k, 8 to 11; 45l, 3; 61b.)
5. Devices for protection against insects and other vermin for the use of man or beast. (Cf. 34g, 20; 15h, 8 and 15.)
6. Continuously operating, and tipping-platform traps, including those which are reset by the victim.
7. Box and trap-door traps.
8. Striking, gripping, and impaling traps.
9. Miscellaneous trap apparatus, exclusive of gr. 1-8, and 45h, 20.
10. Automatic guns for killing animals. (For burglars, 68a, 36).
11. Hunting appliances, e. g., decoys, shooting stands, etc. (Cf. 33a, 14; 34g, 6; 72a, b, d to f, and h.)

## 45l. Preserving Animals and Plants, Chemical Treatment of the Soil, and Chemicals for Exterminating Animals and Plants.

1. Preserving animals and plants, preservation of parts of the body, either of man or animals. (Cf. 45e, 21.)
2. Chemical treatment of the soil for controlling the growth of plants.
3. Chemicals for exterminating animals and plants.

## CLASS 46.—AIR AND GAS ENGINES, SPRING AND WEIGHT MOTORS.

## 46a. Explosion and Internal-Combustion Engines as to their General Arrangement, Including Gunpowder Motors.

1. Miscellaneous methods of operation and ignition.
2. Constant pressure internal-combustion engines without ejectors.
3. Constant pressure internal-combustion engines with ejectors.
4. Four-cycle explosion engines in general.
5. Methods of operation for four-cycle engines.
6. Four-cycle engines of special construction.
7. Gas-steam engines, exclusive of 46d, 6.
8. Explosion engines with two or more parallel cylinders.
9. Explosion engines with obliquely arranged cylinders and radial cylinder engines.

## 46a—Continued.

10. Explosion engines with cylinders arranged tandem.
11. Compound and similar multi-cylinder arrangements.

## TWO-CYCLE EXPLOSION ENGINES. (Gr. 12-19.)

12. Two-cycle engines with separate air pumps.
13. Two-cycle engines with separate gas pumps and air pumps.
14. Two-cycle engines with separate pumps for the mixture.
15. Two-cycle engines with forward air pumps.
16. Two-cycle engines with forward pumps for the mixture.
17. Two-cycle engines without compressing pumps.
18. Operating methods for two-cycle engines.
19. Two-cycle engines of special construction, exclusive of gr. 12 to 17.

20. Explosion and internal-combustion engines with two or more pistons in one cylinder.
21. Same, with opposed pistons in one cylinder.
22. Same, with rotary cylinders.
23. Same, with rotary pistons.
24. Same, with oscillating cylinders or pistons.
25. Same, for motor vehicles.

## ENGINES FOR LIQUID FUELS. (Gr. 26-28.)

26. Engines for liquid fuels in general.
27. Engines of special construction for liquid fuels.
28. Operating methods for liquid-fuel engines.

29. Explosion and internal-combustion engines for special fuels.
30. Gearing for explosion and internal-combustion engines.
31. Explosion and internal-combustion engines without compression.

## 46b. Control and Regulation of the Engines Mentioned Under a.

## VALVE GEARS FOR EXPLOSION AND INTERNAL COMBUSTION ENGINES. (Gr. 1-6.)

1. Valve gears in general.
2. Valve gears for a plurality of valves [poppet valves], also arrangements of such valves.
3. Cock valve gears. (Cf. 14e, 1-4.)
4. Slide valve gears. (Cf. 14d.)
5. Valve gears for four-cycle engines operated directly from the crank shaft.
6. Reversing gears; control devices for starting and braking. (Cf. 14d, 20-23.)

## METHODS AND APPARATUS FOR GOVERNING EXPLOSION AND INTERNAL COMBUSTION ENGINES. (Gr. 7-19.)

7. Idle stroke governors in general.
8. Pendulum governors.
9. Idle stroke governors which operate by holding the exhaust valve open.
10. Idle stroke governors for liquid fuel engines.
11. Idle stroke governors for multi-cylinder engines.
12. Throttle governors. (Cf. 14d, 6, 12; 60, 1.)
13. Governors which vary the admission.
14. Governors which vary the composition of the mixture.
15. Governors which vary the valve lift.

## 46b—Continued.

16. Apparatus for governing the compression space and the piston stroke.
17. Pump capacity governors.
18. Governors for liquid fuel engines, exclusive of gr. 10.
19. Electro-magnetic governors and control apparatus.

**46c. Valves and Gas Pressure Regulators for Explosion and Internal Combustion Engines, Vaporizers and Carbureters so far as they Form Part of the Engine. Igniters, Coolers, Starters, etc. (Valve construction, 47g, generators, 24e.)**

**PRESSURE REGULATORS, VALVES AND STRUCTURAL ELEMENTS OF EXPLOSION AND INTERNAL COMBUSTION ENGINES. (Gr. 1 to 5.)**

1. Pressure regulators, (gas and liquid pressure regulators).
2. Lubrication of gas engines. (Lubrication in general, 47e.)
3. Inlet and exhaust valves, including combined inlet and exhaust valves.
4. Cylinder and casing elements.
5. Miscellaneous structural elements, including pistons, piston rings, fly wheels, etc.

**VAPORIZERS AND CARBURETERS FOR EXPLOSION AND INTERNAL COMBUSTION ENGINES, SO FAR AS THEY FORM PART OF THE ENGINE. (Gr. 6 to 13.)**

6. Automatic injecting apparatus, especially spray carbureters.
7. Injecting apparatus with controlled feed of the fuel (fuel atomizers)
8. Carbureters for solid and for fluid fuels.
9. Surface carbureters
10. Composite devices for producing the fuel mixture (combinations of the devices under 6-9).
11. Devices for the use of various fuels.
12. The making of gas mixtures. (Mixing apparatus of all kinds, mixing valves, valve carbureters, etc.)
13. Special regulating devices for the formation of the fuel mixtures, especially fuel pumps.

**IGNITING APPARATUS FOR EXPLOSION AND INTERNAL COMBUSTION ENGINES. (Gr. 14-17.) (Ignition methods, 46a, 1.)**

14. Electric igniting apparatus (cf. gr. 17, 27); construction of the magneto (cf. 21d, 4); arrangement of the ignition system; connections; regulation of the engine by automatically shifting the spark; make-and-break ignition apparatus, e. g., piston contact igniters; distributing contact breakers; and miscellaneous devices on ignition apparatus, including control mechanism, switches, etc.; transformers for ignition purposes, e. g., interrupters (cf. 21d, 48, 49); mechanism in connection with ignition apparatus for starting the engines (cf. gr. 27).
15. Incandescent ignition apparatus, friction igniters, including those with fulminating bodies.
16. Flame ignition apparatus.
17. Spark plugs, plugs for high-tension current, electro-magnetic make-and-break plugs, connectors for spark plugs.

**COOLING EXPLOSION AND INTERNAL COMBUSTION ENGINES. (Gr. 18-23.)**

18. Air cooling.
19. Water cooling.

## 46c—Continued.

20. Cooling by means of water or air.
21. Cooling of the circulating medium (radiators).
22. Form of the radiating ribs on engines.
23. Miscellaneous cooling apparatus.

**STARTING INTERNAL COMBUSTION AND EXPLOSION ENGINES. (Gr. 24-28.)**

24. Cranking apparatus. (Cf. 63c, 16.) [16 should be 13?]
25. Safety apparatus in connection with starting.
26. Reducing the compression in starting.
27. Starting by means of ignition. (Cf. gr. 14.)
28. Miscellaneous mechanism in connection with starting of gas engines.

**EXHAUST APPARATUS FOR EXPLOSION AND INTERNAL COMBUSTION ENGINES AND RELATED MATTER. (Gr. 29-32.)**

29. Mufflers in general, exclusive of gr. 30. (Cf. 14g, 10; 30d, 29; 72a, 28.)
30. Labyrinth mufflers.
31. Utilization of the exhaust gases.
32. Purification of the exhaust gases; deodorizing.

**46d. Engines Employing Hot-Air, Compressed-Air, Ammonia, Carbonic-Acid, Ether, Steam-Air and Steam-Gas Mixtures, Etc., Including Manufacture of such Gas Mixtures and Other Heat Engines.**

1. Open hot-air engines.
2. Enclosed hot-air engines.
3. Miscellaneous mechanism in connection with hot-air engines.
4. Cold vapor engines, including those driven by ammonia, carbonic acid, ether, or like vapors
5. Compressed-air engines, vacuum air engines.
6. Gas-steam engines, together with the related generators. (Cf. 46a, 7.)
7. Air-steam engines, together with related generators.
8. Gas-air engines, together with related generators.
9. Gas-air-steam engines, together with related generators
10. Turbines for gaseous driving means, exclusive of steam turbines, and related generators
11. Miscellaneous heat engines, exclusive of gr. 1 to 10, e. g., utilization of the heat of the sun for power purposes, general arrangement of suction-gas portable engines, etc.

**46e. Spring, Weight, and Other Motors. (Horse-powers 45d, tide motors, etc., 88b.)**

1. Spring motors with spiral springs.
2. Spring motors with screw-shaped coils which are put under tension by push or pull.
3. Spring motors put under tension by torsion.
4. Weight motors.
5. Hand or foot motors. (Cf. 45d, 5.)
6. Miscellaneous motors in general, exclusive of gr. 1-5.
7. Structural elements of motors of gr. 1 to 6.
8. Power-transmission devices. (Cf. 47b, h.)

**CLASS 47.—MACHINE ELEMENTS.**

**47a. Fixed Structural Parts, Including Keys, Rivets, Screws, Bolts, Nut Locks, Springs, Frames, Protective Elements, Safety Devices, and the Like.**

**FASTENING FEATURES IN THE STRUCTURAL ELEMENTS OF MACHINES. (Gr. 1-3.)**

1. Key and wedge fastenings in general, (Cf. 19a, 10.)
2. Connections for plates.
3. Rod connections, including those which are elastic.



## 47a—Continued.

**FASTENING DEVICES FOR THE PARTS OF MACHINES.**  
(Gr. 4-8.)

4. Nails and metallic wood screws in general. (Cf. 19a, 10; 34e, f, g; 45i, 14; 81c, 3; manufacture, 7e, 7-20; 38k, 3.)
5. Rivets, cotter pins, and the like.
6. Screw-threaded fastenings [bolts, etc.]. (Driving screws, 47b; manufacture, 7f; 49c.)
7. Nuts. (Cf. 47b, 29; manufacture, 49a, 47; 49b, 4; 49c; 49g, 5.)
8. Washers. (Cf. gr. 11.)

**LOCK DEVICES FOR SCREW-THREADED FASTENINGS.**  
(Gr. 9-15.) [Nut Locks.]

9. Nut locks operating as ratchet mechanism.
10. Nut locks comprising keys or cotters.
11. Washers acting as nut locks.
12. Nut locks involving special formation of the nut or the thread.
13. Nut locks comprising clamps or sleeves.
14. Nut locks comprising spanners.
15. Miscellaneous nut locks, exclusive of gr. 9 to 14.

16. Base plates and frames as machine elements.
17. Metallic springs as machine elements. (Vehicle springs, 20d, 21; 63b, 14; 63c, 22; clock gongs, 83a, 61; springs for upholstered furniture, 34g; manufacture, 7d, 7.)
18. Safety devices for machines of all kinds, e. g., casings for moving machine parts, protective gratings and bars, positive disconnection of the driving means, and the like. (Cf. 7c, 17; 15d, 28; 15d, 41; 38e, 10, 11; 58b, 16; 80a, 29.)
19. Fixed structural elements of machines in general, exclusive of gr. 1-18.

**47b. Structural Parts for Transmitting Reciprocating, Rotary or Screw Movements, Including Journal Boxes, Journals, Joints, Driving Screws, Levers, Wheels, Belt Pulleys, Etc.****AXLES, SHAFTS, ROLLS, AND JOURNALS.** (Gr. 1-3.)

1. Axles, rigid shafts and rolls.
2. Flexible and link shafts. (Cf. 63c, 12.)
3. Journals.

**BEARINGS.** (Gr. 4-12.) (Cf. 47e, 1-3.)

4. Bearings in general.
5. Movable bearings.
6. Bearings adjustable for wear.
7. Yieldably supported bearings.
8. Pressure relieving mechanism for bearings. (Cf. 21c, 24; 21g, 5.)
9. Brasses or linings for bearings.
10. Cooling apparatus for bearings.
11. Mountings for rolls and drums.
12. Roller and ball bearings in general. (Cf. 20d, 15; 63d, 14 and 15.)

**ROTARY JOINTS AND BAR-SHAPED MACHINE PARTS.**  
(Gr. 13-19.)

13. Rotary or pivot joints.
14. Levers.
15. Crossheads.
16. Cranks.
17. Cams and eccentrics.
18. Connecting rods and coupling links.
19. Piston rods.

## 47b—Continued.

**DRIVING WHEELS, PULLEYS, ETC.** (Gr. 20-26.)

20. Driving wheels and pulleys in general.
21. Belt pulleys of fixed size.
22. Expansible belt pulleys.
23. Toothed wheels and rack bars.
24. Sprockets.
25. Friction wheels.
26. Rope sheaves.

**MISCELLANEOUS STRUCTURAL PARTS FOR THE TRANSMISSION OF MOTION IN MACHINES, EXCLUSIVE OF GROUPS 1-26.** (Gr. 27-32.)

27. Idlers, tighteners, pressure-applying rollers and slide rolls.
28. Fly wheels, equalizers for power and mass.
29. Driving screws and nuts therefor. (Cf. 47a, 6.)
30. Frictional parts in general as machine elements. [Antifriction compositions, etc.]
31. Slides for reciprocating parts, including those with rollers. [For cross-heads and the like.]
32. Pulling and pushing devices with guiding sleeves. [Reciprocating flexible shafts.] (Cf. 42p, 12; 57a, 32.)

**47c. Shaft Couplings, Clutches, and Brakes.** (Railway car couplers, 20e, 1 to 20; couplings for motor vehicles, 63b, 40; 63c, 1, 12; 63k, 25, 34; brakes in general, 20f; brakes for hoisting mechanism, 35c, 3 to 7.)**SHAFT COUPLINGS.** (Gr. 1 to 5.)

1. Rigid shaft couplings.
2. Hub fastenings.
3. Set collars.
4. Movable shaft couplings (universal joints).
5. Yieldable shaft couplings.

**CLUTCHES AND CLUTCH-SHIFTING MECHANISM IN GENERAL.** (Gr. 6-16.)

6. Toothed and other positive clutches. (Cf. 20c.)
7. Internal expanding clutches.
8. External contracting clutches.
9. Cone and disk friction clutches.
10. Brake-band and brake-ring clutches.
11. Multiple disk clutches.
12. Clutches of mixed types.
13. Centrifugal friction clutches.
14. Spring and brush clutches.
15. Electric clutches. (Cf. 21d, 14.)
16. Shifting mechanism for clutches. (Cf. 47d, 20, 21.)

## 17. Brakes as machine elements.

**47d. Belts, Cables, Chains, Stretchers, Fasteners, Holders including Hooks, Lifters and Shifters.****DRIVING BELTS AND APPURTENANCES.** (Gr. 1-9.)  
(Manufacture of belts, 28b, 20 to 23.)

1. Driving belts and appurtenances in general, including belt lubricators. (Cable and chain lubricators, 47e, 35.)
2. Driving belts of leather and their manufacture in general. (Special methods of making, 28b, 20-23.)
3. Driving belts of fibrous fabrics and their manufacture in general. (Special methods of making, 25a, b; 86c.)
4. Driving belts of wire fabric. (Manufacture, 7d, 6; 86f.)
5. Driving belts of rubber. (Manufacture, 39a, 10.)

**47d—Continued.**

6. Driving belts of metal bands.
7. Link driving belts.
8. Composite driving belts.
9. Belt connectors. (Tools for connecting belts, 63a, 1.)

**DRIVING CABLES, CORDS AND APPURTENANCES.** (Gr. 10-12.) (Cordage in general, 73.)

10. Driving cables and cords.
11. Connectors for driving cables and cords.
12. Rope holders, e. g., clamps, sleeves, knots. (Cable grippers, 20a, 18 to 20, curtain-cord fasteners, 34e, 4, 5.)

**CHAINS AND HOOKS.** (Gr. 13-16.)

13. Nonseparable chains. (Manufacture, 49h; watch chains and ornamental chains, 44a, 39.)
14. Separable chains.
15. Special devices for connecting or fastening chains (swivels, bars, holders, and the like)
16. Hooks for load-supporting chains and the like; also snap hooks. (Cf. 35b, 7; 44a, 31; manufacture, 7e, 19.)

**STRETCHERS, LIFTERS, AND SHIFTERS FOR DRIVE BELTS AND CABLES.** (Gr. 17-21.)

17. Stretchers for drive belts and cables.
18. Hand implements for placing drive belts and cables upon the pulleys.
19. Mechanical devices for placing drive belts and cables on the pulleys.
20. Belt and cable shifters [for shifting either the belt or the idle pulley clutch].
21. Miscellaneous shifters (exclusive of gr. 20), especially for shifting from a distance. (Cf. 47g, 45; safety devices, 47a, 18.)

**47e. Lubricating Apparatus.****LUBRICATING APPARATUS FOR JOURNAL BOXES.** (Gr. 1-3.) (Cf. 20d, 18-20; 63d, 13.)

1. Lubricating apparatus for horizontal journal boxes.
2. Lubricating apparatus for thrust and neck bearings.
3. Miscellaneous lubricating apparatus for journal boxes (exclusive of grs. 1 and 2).

**LUBRICATORS FOR PARTS NOT UNDER PRESSURE.** (Gr. 4-6.) (Cf. gr. 19 and 31.)

4. Lubricators without movable parts.
5. Lubricators with movable parts.
6. Wick lubricators and miscellaneous lubricators (exclusive of grs. 4 and 5.)

**LUBRICATING APPARATUS FOR ROTARY MACHINE PARTS.** (Gr. 7-8.)

7. Lubricating apparatus for cranks and eccentrics.
8. Lubricating apparatus for idle pulleys and rollers.

**LUBRICATING APPARATUS FOR RECIPROCATING MACHINE PARTS.** (Gr. 9-12.)

9. Lubricating apparatus for slide valves.
10. Lubricating apparatus for pistons.
11. Lubricating apparatus for stuffing boxes and piston rods.
12. Lubricating apparatus for cross heads and rods.

**LUBRICATING APPARATUS FOR STEAM ENGINE AND GAS ENGINE CYLINDERS.** (Gr. 13, 14.) (Cf. 46c, 2.)

13. Lubricating apparatus operating by condensation displacement.

**47e--Continued.**

14. Lubricating apparatus operated by changes in pressure, etc.

**LUBRICATING PRESSES.** (Gr. 15-21.)

15. Lubricating presses driven by ratchet mechanism.
16. Steam operated lubricating presses.
17. Spring operated lubricating presses.
18. Weight operated lubricating presses.
19. Hand operated lubricating presses (Stauffer lubricators.)
20. Lubricating presses operated by centrifugal force.
21. Miscellaneous lubricating presses, exclusive of gr. 15-20.

**LUBRICATING PUMPS, OIL LOCKS AND OIL CONVEYING MECHANISM.** (Gr. 22-26.)

22. Lubricating pumps with ratchet-driving mechanism.
23. Steam operated lubricating pumps.
24. Miscellaneous lubricating pumps, exclusive of gr. 22 and 23
25. Oil locks [including an oil passage intermittently opened and closed analogous to canal locks]
26. Oil conveying mechanism [devices for scooping up oil, etc.]. (Cf. 59d, 1.)

**LUBRICATING SYSTEMS.** (Gr. 27-29.)

27. Oil distributors for lubricating systems
28. Lubricating systems operated by compressed air or water pressure.
29. Miscellaneous lubricating systems, exclusive of group 28

30. Lubricating apparatus for lubricants containing graphite.

**ELEMENTS OF LUBRICATING APPARATUS.** (Gr. 31-33.)

31. Closures and lids for lubricators
32. Feeding spindles for lubricating apparatus
33. Miscellaneous elements of lubricating apparatus.

34. Oil cans for lubricating purposes.
35. Lubricating apparatus for various purposes, exclusive of gr. 1-34. (Lubricating apparatus for drive belts, 47d, 1.)

**47f. Tubular Conduits, Pipes, Hose, Receptacles, Pistons, Bolts, Stoppers, Packing, Stuffing Boxes, Heat Insulating Coverings** (exclusive of manufacture, class 39b; 80b).**CONDUITS.** (Gr. 1-2.) (Cf. 4c; 21c, 18-19; 85d; 85e, 6-8, 16.)

1. Conduits in general, e. g., hangers, elbows, pipe branches.
2. Clips or wall hooks for pipes in general. (Cf. 37c, 10.)

**PIPES AND HOSE AND CONNECTIONS FOR THE SAME.** (Gr. 3-17.) (Cf. 4c; 21c, 18-19; 85d; 85e, 6-8, 16.)

3. Pipes, so far as relates to structure and material. (Pipe making, 7a, b, c; 31b, c; 80a.)
4. Hose of yielding nonmetallic materials, especially woven fabrics and rubber. (Manufacture, 25a, b; 39a, 10 and 11; 86c.)



## 47f—Continued.

5. Metal hose and flexible pipes.
6. Nonreleasable pipe and hose couplings.
7. Flange pipe couplings with fixed or loose flanges.
8. Socket couplings for pipes.
9. Screw pipe couplings.
10. Pipe and hose couplings comprising hooks for pressing the parts together.
11. Automatic pipe and hose couplings (with spring pawls or the like).
12. Pipe and hose couplings for railway vehicles.
13. Jointed pipe couplings [pivotally movable].
14. Miscellaneous pipe and hose couplings, exclusive of groups 6 to 13.
15. Compensating apparatus for pipes.
16. Hose wrappings [patches, etc.]
17. Hose unions for attaching hose to pipes, etc., also hose clamps.

18. Receptacles and cylinders as machine elements.
19. Pistons and piston packing. (Pump pistons, 59a, 11.)
20. Floats. (Float water-level indicators, 13c, 9.)
21. Closures for pipes and receptacles, especially for high internal pressures. (Cf. 47g, 47; 64a.)
22. Packing, exclusive of piston packing, gr. 19, and stuffing-box packing, gr. 24 to 26.

## STUFFING BOXES AND STUFFING-BOX PACKING. (Gr. 23-26.)

23. Stuffing boxes
24. Metallic stuffing-box packing
25. Nonmetallic stuffing-box packing, e. g., of fibrous material or rubber.
26. Labyrinth packings and special arrangements of stuffing-box packing.

27. Heat-insulating agencies or materials in general. (Cf. 34l, 11; 36b, 6.) (Processes of making mineral heat-insulating materials, 80b, 9, or those which are not mineral, 39b, 9.)

## 47g. Valve, Cock and Slide Valve Structures of all Kinds, Pressure Regulators of General Application. (See also class 4c, 46c.)

[NOTE.—The term "valve" alone is used throughout for valves which are movable bodily to and from the valve seat as distinguished from cocks and slide valves.]

## SCREW VALVES. (Gr. 1-4.)

1. Screw valves in general.
2. Screw valves in which the valve body is prevented from turning.
3. Screw valves for high pressure, e. g., for carbonic acid containers.
4. Screw valves with independently adjustable fluid passages.

## AUTOMATIC CLOSING VALVES, ESPECIALLY TAP VALVES AND VALVES WHICH DELIVER A DEFINITE QUANTITY OF WATER. (Gr. 5-8.)

5. Automatic closing valves in general.
6. Automatic closing valves with means for braking the movement of the valve body.
7. Automatic closing valves with a counter-pressure chamber, and an auxiliary valve, cock, or slide valve.
8. Back-pressure check valves.

## 47g—Continued.

## CONTROL VALVES FOR ENGINES AND WORKING MACHINES [PUMPS, ETC.]. (Gr. 9 to 14.)

9. Automatic valves in general.
10. Automatic ring valves with one ring.
11. Automatic ring valves with a plurality of rings.
12. Automatic valves with leaf-shaped valve bodies.
13. Valves actuated by valve gear.
14. Valves with tubular or piston-shaped sliding parts (automatic, or valve-gear actuated). (Cf. gr. 28.)

## STEAM PIPE ISOLATING VALVES. [EMERGENCY CHECKS.] (Gr. 15-18.)

15. Steam pipe isolating valves in general.
16. Same with automatic closure produced by the energy or movement of the pressure medium.
17. Same with by-pass arrangements.
18. Same with auxiliary valves.

19. Valves with leaf-shaped valve bodies (throttle valves, clack valves, etc.).
20. Multiple-way and mixing valves. (Cf. gr. 25; 85f, 2.)
21. Miscellaneous valves exclusive of gr. 1-20.

## COCK STRUCTURES OF ALL KINDS. (Gr. 22-25.) (Cf. 4c, 1-14.)

22. Cocks in general
23. Cocks with separately adjustable fluid passage.
24. Automatic closing cocks.
25. Multiple-way and mixing cocks. (Cf. gr. 20; 85f, 1.)

## GATE OR SLIDE VALVE STRUCTURES OF ALL KINDS. (Gr. 26-29.)

26. Slide valves (ordinary).
27. Rotary-disc valves.
28. Tubular and piston slide valves. (Cf. gr. 14; 14d, 7.)
29. Control slide valves for engines and working machines.

## PRESSURE REGULATORS OF GENERAL APPLICATION. (Gr. 30-33.) (Cf. 4c, 27-32; 27b, 9; 64c, 13; 85d.)

30. Pressure regulators with pistons for positioning the valve body.
31. Pressure regulators with diaphragms for positioning the valve body.
32. Pressure regulators with floats for positioning the valve body.
33. Miscellaneous pressure regulators, exclusive of gr. 30 to 32.

## MISCELLANEOUS SPECIAL MECHANISM FOR VALVES, COCKS, AND SLIDE VALVES. (Gr. 34-47.)

34. Balancing mechanism.
35. Buffers, dashpots, and braking apparatus.
36. Cushions for taking up water hammer.
37. Mechanism for draining valves, etc. (Cf. 85d, 13.)
38. Mechanism for removing air and for admitting air for valves, etc. (Cf. 85d.)
39. Housing structure.
40. Formation of valve seats and packing.
41. Mechanism for cooling or heating valves, etc.
42. Auxiliary closures.
43. Operating devices in general.
44. Operating devices comprising floats. (Cf. 85h.)

## 47g—Continued.

45. Apparatus for adjusting valves, etc., from a distance.
46. Fastening or locking devices for valves, etc.
47. Safety valves and safety mechanism for receptacles for condensed or liquefied gases. (Cf. 13c; 47f, 21.)

**47h. Gearing.** (Gearing for steam engines, 14a, d to f; for machine tools, 38a to e, 49a to c; starting gearing, 46c; for motor vehicles, 63c; for bicycles, 63k.)

**WEDGE, CRANK, CAM, AND SCREW GEARING.** (Gr. 1-3.)

1. Wedge movements and crank gears (slot and crank, crank bars, oscillating lever gearing, oscillating lever treadle mechanism, including that with variable throw, and reversing crank gearing).
2. Cam gearing (eccentric), cam and cam groove gearing, including that with adjustable throw.
3. Screw and worm gearing.

**DETENT AND RATCHET MECHANISM.** (Gr. 4-5.)

4. Detent mechanism (locking gears, catch mechanism, escapements, and gearing for transforming continuous into intermittent movement).
5. Intermittent grip driving mechanism. (Ratchet, pawl, and friction pawl or clutch driving mechanism, including those with adjustable throw, intermittent grip treadle mechanism, also intermittent grip change-speed and reversing gearing.) (Cf. gr. 4.)

**SPUR-WHEEL AND FRICTION-WHEEL GEARING.** (Gr. 6-8.)

6. Spur-wheel gearing in general. (Cf. gr. 12.)
7. Epicyclic gearing in general. (Planet-wheel gearing, differential mechanism, compensating gearing, epicyclic mechanism with parallel motions [planetary eccentric.]) (Cf. gr. 13.)
8. Friction-wheel gearing in general, including that with magnetic traction. (Cf. gr. 14, 22.)

**BELT, ROPE, AND SPROCKET GEARING.** (Gr. 9-11.)

9. Belt gearing in general. (Cf. gr. 15, 19.)
10. Rope gearing in general. (Cf. gr. 16, 19.)
11. Sprocket gearing in general. (Cf. gr. 17, 19.)

**CHANGE-SPEED AND REVERSING GEARING.** (Gr. 12-19.)

12. Spur-wheel change-speed and reverse gearing. (Cf. gr. 6, 19.)
13. Planetary change-speed and reverse gearing, including that with parallel motions [planetary eccentric]. (Cf. gr. 7, 19.)
14. Friction-wheel change-speed and reverse gearing. (Cf. gr. 8, 19.)
15. Belt change-speed and reverse gearing. (Cf. gr. 9, 19.)
16. Cable change-speed and reverse gearing. (Cf. gr. 10, 19.)
17. Sprocket change-speed and reverse gearing. (Cf. gr. 11, 19.)
18. Hydraulic and compressed-air change-speed and reverse gearing. (Cf. gr. 19, 22.)
19. Reversing gearing, reversing motions, and reversing devices. (Cf. gr. 1, 2, 5, and 12 to 18.)

**MISCELLANEOUS GEARING.** (Gr. 20 to 24.)

20. Driving apparatus, starting and stopping mechanism, mechanism adjustable from a distance, gearing for equalizing driving power and load.

## 47h—Continued.

21. Composite gearing for transforming one kind of movement into another (gearing comprising racks and pinions or rack segments, with or without automatically operating ratchet or intermittent grip devices; alternating rotary gearing and the like).
22. Hydraulic and compressed-air tube apparatus for transmitting reciprocating motions, gearing with electromagnetic and other power transmission. (Cf. gr. 8, 18; 21d, 14; 21g, 3; 47c, 15.)
23. Straight line and parallel motions.
24. Spring movements (spring motors, 46e), oval movements, cycloidal movements, and the like.

**CLASS 48. METAL WORKING, CHEMICAL.**

**48a. Electrometallurgy, including Electrotyping, Electroplating, Galvanic Metal Etching, Etc.**

**PRELIMINARY TREATMENT OF ARTICLES FOR ELECTROPLATING.** (Gr. 1-3.)

1. Cleaning, pickling, and removing grease from metal articles to prepare them for electroplating.
2. Imparting conducting capability to nonmetallic articles.
3. Preliminary treatment of articles for the purpose of making easily detachable coherent metal deposits; also removal of the deposited metal.
4. Anode and cathode forms, also anode supports and hangers for the articles to be plated. (Cf. 40c, 3.)

**BATHS FOR ELECTROTYPY AND ELECTROPLATING.** (Gr. 5-6.) (Cf. 40c, 5, 7 to 12, 14.)

5. Electroplating baths in general and materials to be added to the same.
6. Baths for the production of specific metal deposits, e. g., silver, gold, copper, nickel, etc.; plating with aluminum, also upon aluminum, etc.

**ELECTROTYPY.** (Gr. 7-10.)

7. Production of articles by electrotypy in general, e. g., models, figures, etc.
8. The production of articles by electrotypy, e. g., tubes, by the manipulation of the deposit in the bath by means of compressing and polishing tools. (Elmore method.)
9. The production of metallic wire and ribbon by electrotypy, also electroplating of wire and metal ribbon. (Cf. gr. 11.)
10. The production of metallic mirrors by electrotypy, of porous and crystalline masses, also miscellaneous processes of electrotypy exclusive of gr. 7-9. (Cf. 32b, 10; 75d.)

**ELECTROPLATING.** (Gr. 11-15.)

11. Electroplating of sheet metal. (Cf. gr. 9.)
12. Apparatus for electroplating articles in bulk.
13. Contact processes for the production of metal deposits.
14. Miscellaneous processes of electroplating, exclusive of gr. 11, 12. (Cf. gr. 9.)
15. Miscellaneous apparatus for electroplating, exclusive of gr. 11, 12 (cf. gr. 9), anode brushes, moving baths, voltametric balances, etc.

16. Galvanic etching, corroding, and coloring.



**48b. Metal Coating, e. g., Gilding, Tinning, Zincing, etc. (exclusive of electroplating).**

(Electroplating, 48a, 11-15, coloring of metal, 48d, 3, 4.)

1. Preliminary treatment and cleaning of the articles to be coated; also cleaning articles after coating with metals. (Cf. 48a, 1.)
2. Apparatus for metal coating. (Cf. 32b, 10.)
3. Removal of the superfluous coating of metal in connection with metal coating.
4. Coating wire with metals. (Cf. 48a, 9.)
5. Coating metal articles with lead
6. Zincing metal articles. (Zinc electroplating, 48a, 6.)
8. Production of metal coatings by rubbing on metal salts, amalgams, etc.
9. Production of metal coatings upon aluminum (By electroplating, 48a, 6.)
10. Miscellaneous application of metal coatings to metals, e. g., gilding, silvering, etc., also protective coatings (exclusive of gr. 1-9; 48a; 18d, 4).

**48c. Enameling and Glazing Metals.**

1. Application of enamel coatings and glazes to metals in general. (Cf. 80a, 47; 80b, 23.)
2. Making of mottled enamel upon metals.
3. Enamel-applying machines.
4. Enameling furnaces for metal enameling, especially of iron.
5. Enameling sheet metal utensils
6. Enameling sheet metal writing tablets, etc. (Cf. 70c, 1.)

**48d. Chemical Metal Working (exclusive of a to c).**

1. Metal etching (by means of chemicals, especially acids), also apparatus for etching for the production of photo-mechanical printing forms and "klischée." (Cf. 15b, 1; galvanic etching, 48a, 16.)
2. Corroding or pickling of sheet metal and wire (by chemicals, especially acids).
3. Coloring metal (exclusive of galvanic coloring, 48a, 16).
4. Protection from rust by means of coatings, e. g., burnishing, etc. (Cf. 48b, e. g., gr. 10.)
5. Miscellaneous processes and apparatus for chemical metal working exclusive of gr. 1 to 4, e. g., furnaces. (Cf. 7b, 7, 18c, 49f, 6); cutting by means of burners (processes and guide apparatus). (Burners for cutting metals, 4g, 44.)

**CLASS 49.—METAL WORKING, MECHANICAL**  
(exclusive of sheet metal, pipe, and wire working, and rolling mills, class 7).**49a. Turning, Boring, and Milling.** (Milling machines for copying, class 75.)**METAL WORKING LATHES AND SIMILAR APPARATUS.**  
(Gr. 1-14.)

1. Metal-working lathes in general.
2. Metal-working lathes for special purposes, not elsewhere mentioned. (Cf. gr. 3 to 10.)
3. Metal-working lathes for cutting screw threads.
4. Metal-working lathes for convex work, as crowned pulleys, etc.
5. Metal-working lathes for conical turning.
6. Metal-working lathes for noncircular turning, e. g., oval work.
7. Metal-working lathes and apparatus for turning balls.

**49a (Continued).**

8. Metal-working lathes for turning nuts and washers.
9. Metal-working lathes and apparatus for backing off.
10. Lathes for turning down car wheels and the like.
11. Turret lathes for metal working.
12. Rotary cutter holders, including machines and apparatus for turning down flanges and the like.
13. Apparatus for turning journals, crank pins, etc.
14. Cutting-off [slicing] machines (for solid and hollow stock).

**PARTS OF METAL-WORKING LATHES. (Gr. 15-26.)**

15. Spindle bearings and the like.
16. Driving mechanism.
17. Locks for self-acting feed and the like for tool rests for surfacing and longitudinal turning.
18. Tool rests, including hand tool rests.
19. Tail stocks.
20. Lathe chucks and surface plates.
21. Mandrels, and the like.
22. Lathe mounting apparatus for special metal working purposes.
23. Work drivers.
24. Work rests [stays].
25. Lathe tools and tool holders.
26. Special apparatus for metal working lathes.

**MACHINES AND APPARATUS FOR METAL BORING AND DRILLING. (Gr. 27-38.)** (Wood-boring machines, 38b.)

27. Metal-drilling machines in general.
28. Metal-drilling machines and apparatus driven by means of steam, compressed air, hydraulic pressure or electricity.
29. Drilling machines for special metal-working purposes not elsewhere mentioned.
30. Multiple spindle drilling machines.
31. Machines and apparatus for boring metal cylinders and the like.
32. Machines and apparatus for making tubes for ordnance, gun barrels, and shells (boring, rifling, turning down, and the like). (Cf. 72a, 27; 72c, 15; 72d, 14-17.)
33. Drilling apparatus for metal working lathes.
34. Hand drills for metal working, exclusive of ratchet drills. (Cf. gr. 35.)
35. Ratchet drills.
36. Readily adjustable metal drilling apparatus.
37. Machines and apparatus for drilling noncircular, e. g., rectangular, and conical holes in metal.
38. Apparatus for tapping mains and the like under pressure.

**PARTS OF METAL BORING AND DRILLING MACHINES AND APPARATUS. (Gr. 39-44.)**

39. Boring bars, and the like.
40. Ratchet drill supports, bore collars, and the like.
41. Spiral or Archimedian screw drills for metal working.
42. Twist drills, and the like.
43. Boring heads.
44. Drill chucks.

**METAL MILLING. (Gr. 45-56.)** (Milling machines for wood, 38b, 5.)

45. Metal milling machines in general.
46. Metal milling machines for special purposes not elsewhere mentioned. (Cf. gr. 48.)
47. Metal milling machines for cutting round and prismatic articles, as nuts, washers, and the like.
48. Milling machines for making balls.
49. Milling machines for twist drills.
50. Machines and apparatus for milling key seats, lubricating grooves, and the like.

## 49a—Continued.

51. Milling machines for gear wheels.
52. Metal milling apparatus for miscellaneous purposes. (Cf. gr. 44.)
53. Metal milling apparatus for lathes.
54. Apparatus, including milling cutters, for cutting valves, and the like.
55. Milling cutters and tool heads for metal working.
56. Parts of metal milling machines.

## CENTERING. (Gr. 57-58.)

57. Apparatus for starting a central bore in metal articles.
58. Apparatus for finding centers and for centrally marking articles as with center punches. (Cf. 42b, 23.)

## 59. Combined machines and apparatus of gr. 1 to 58

**49b. Planing, Slotting, Shearing, Including Hand Shears for Sheet Metal and Wire, Punching, Sawing, Filing and Scraping, Including Reamers, Assorting and Feeding.** (Engraving, class 75.)

## METAL PLANING AND SLOTTING. (Gr. 1-10.)

1. Metal planers in general.
2. Metal shapers and slotters.
3. Metal planers and slotters for special purposes, e. g., round planing, planing ship propellers, cutting profiles, angle irons, and the like.
4. Planers and slotters for nuts and other prismatic articles.
5. Planers and slotters for cutting key seats and lubricating grooves.
6. Planers and slotters for cutting gears and rack bars.
7. Planing and slotting machines and apparatus which cut in both directions of travel.
8. Apparatus for metal-working lathes and the like for planing and slotting.
9. Elements of metal planers and slotters (driving mechanism, control, shifting, and the like).
10. Tools and tool holders for metal planers and slotters.

## METAL SHEARING AND PUNCHING. (Gr. 11-20.)

11. Shears with parallel movement of the blades.
12. Shears with pivoted blades (lever shears).
13. Rotary shears.
14. Shears for cutting special forms, e. g., for cutting out oval apertures, and the like; also shears for cutting material as it leaves the rolls in a rolling mill, including traveling shears.
15. Shearing of profile and bar iron, also miter cutting, and the like.
16. Metal comminuting machines (pig-iron breakers and the like).
17. Hand shears for metal. (Cf. 69.)
18. Perforating and punching machines for metal, including those combined with shears and those for rolling mills.
19. Metal-working shears, perforating and punching machines for special purposes.
20. Tools for shearing, perforating, and punching machines.

## METAL SAWING, FILING, AND SCRAPING. (Gr. 21-29.)

21. Metal sawing machines with circular saws.
22. Metal sawing machines with band saws. (Cf. 38a, 1, 2, 4.)
23. Sharpening and setting metal saws. (Cf. 38a, 14, 15.)
24. Tools for metal-sawing machines.
25. Manufacture of saw blades.

## 49b—Continued.

26. Filing machines
27. Files. (Cf. 49d.)
28. Reamers.
29. Apparatus and tools for scraping metal.

## ASSORTING AND FEEDING METAL BLANKS IN GENERAL. (Gr. 30-31.)

30. Apparatus for assorting metal blanks.
31. Apparatus for feeding and guiding metal blanks.

32. Vises and apparatus for mounting material for use on metal-working machine tools.
33. Special apparatus and tools for metal working of subclass 49b (exclusive of gr. 1-32).

**49c. Thread Cutting** (on thread-cutting lathes and ordinary milling machines, class 49a), also **Screw-head Nicking.**

1. Screw-cutting machines for metal screws
2. Screw-cutting machines for wooden screws
3. Tapping machines.
4. Milling machines for cutting screw threads
5. Machines and apparatus for cutting threads on pipes. (Cf. gr. 13; 80a, 47.)
6. Thread-cutting devices, exclusive of screw stocks and thread-cutting apparatus for pipes
7. Screw stocks, screw plates, stocks, and dies
8. Screw taps and tap heads.
9. Screw-cutting chucks.
10. Machines for working upon screw heads (head-nicking machines and the like).
11. Special apparatus and tools for screw cutting, exclusive of gr. 1 to 9.

**49d. File Making.** (Grinding with sand blast, class 67b.)

(Grinding machines for files, 67a, 3.)

1. File making. (Cf. 49b, 27.)
2. Making rasps. (Cf. 38e, 5.)

**49e. Hammers** (exclusive of hand hammers, 87b), **Forging Presses, Riveting Machines and the Like, Hydraulic Mechanism for Shears and Punches.**

## HAMMERS (hand hammers, 87b). (Gr. 1-7.)

1. Hammers driven by steam or gas power.
2. Pneumatic hammers.
3. Electric hammers.
4. Mechanically driven hammers.
5. Bar drop-hammers [hammer on the end of bar]
6. Belt drop-hammers [hammer on the end of belt or cable]
7. Tilt hammers.

## FORGING PRESSES. (Gr. 8-9.)

8. Hydraulic forging presses.
9. Mechanical forging presses.

## RIVETING MACHINES. (Gr. 10-13.)

10. Hydraulic riveting machines.
11. Pneumatic riveting machines.
12. Mechanically operated riveting machines.
13. Electric riveting machines.

14. Shears and punches with hydraulic driving mechanism.



**49f. Forging, Pressing, Bending, Soldering, and the Furnaces Relating Thereto.** (Hardening, class 18c.)

(Metal working by means of electrically developed heat, 21h, 12-14.)

**FORGING.** (Gr. 1-6.)

1. Upsetting by forging. (Cf. 7d; 54a.)
2. Electric metal working (exclusive of welding, gr. 18).
3. Forging machines.
4. Auxiliary tools and apparatus for forging machines and for machine hammers.
5. Tweers for forges.
6. Heating furnaces for forging use, forges, and tire heaters. (Cf. 7b, 7; 18c, 10; 48d, 5.)

7. Metal pressing. (Forging presses, 49e, 8, 9; pressed metal articles in general, 49g.)

**METAL BENDING.** (Gr. 8-10.)

8. Bending and coiling metal bars and rods.
9. Bending metal tubes.
10. Straightening metal by bending.

**SOLDERING AND WELDING.** (Gr. 11-18.)

11. Soldering materials and processes in general. (Cf. gr. 15.)
12. Soldering irons. (Burners for heating soldering irons, 4g, 44; electric soldering irons, 21h, 13.)
13. Soldering lamps and blow pipes. (Burners for soldering lamps, 4g, 29.)
14. Auxiliary tools for soldering, exclusive of gr. 12, 13.
15. Aluminum soldering.
16. Machines for soldering up cans, e. g., preserving cans and the like.
17. Soldering furnaces. (Soldering apparatus for dental purposes, 30b, 17.)
18. Welding. (The production of electric current for welding, 21h, 12; welding burners, 4g, 44.)

19. Piercing metal ingots. (Cf. 7b, 10.)

**49g. Manufacture of Special Articles by Forging and Pressing, e. g., Horseshoes, Bolts, Screws, Wheels, and the Like.**

1. Manufacture of horseshoes. (Cf. 7f, 7; 45i.)
2. Manufacture of heel plates and irons
3. Manufacture of bolts, including screw bolts.
1. Manufacture of rivets. (Cf. 47a, 5.)
5. Manufacture of nuts.
6. Manufacture of wheels
7. Manufacture of drills.
8. Manufacture of articles for railway use, as journal boxes, pedestals, buffers, spring shackles, parts for track structure, and the like.
9. Manufacture of knives, shears, plane bits, chisels, and similar cutting tools.
10. Manufacture of miscellaneous articles by forging and pressing, exclusive of gr. 1 to 9.

**49h. Chain Making.** (Bicycle chains, 63k, 29; chains as machine elements, 47d, 13-15; chains for cleaning bottles, etc., 64b, 3; conveyer drag chains, 81c, 3; ornamental chains, 44a, 39; safety chains, 68b, 8; cattle chains, 45h, 2; chain making by casting, 31c, 25-26.)

1. Manufacture of load-supporting chains by bending round or bar iron and subsequent welding.

**49h—Continued.**

2. Manufacture of load-supporting chains by simple bending of wire without welding.
3. Manufacture of load-supporting chains by coiling wire, round, or bar iron, and welding.
4. Manufacture of load-supporting chains by forging or rolling from solid blanks without welding.
5. Electric welding of chains.
6. Forming chain links and trimming same.
7. Manufacture of driving chains.
8. Manufacture of ornamental chains, including soldering. (Soldering in general, 49f, 11-17.)

**49i. Metal Working, Exclusive of that Mentioned Under a to h, Including Manufacture of Bronze (bronze paints, 22f), Gold Leaf, Hard Solder, and Battery Plates, Doubling, Making Metal Powder, Setting Diamonds in Boring and Cutting Tools, Making Turbine Blades, and the Like.**

1. Manufacture of bronze.
2. Manufacture of leaf metal, especially gold leaf.
3. Manufacture of metal powder, including spraying methods, metal shot and granules and hard solder.
4. Manufacture of battery plates by means of tools. (By casting, 31c, 22.)
5. Doubling of wire, tubes, plates, etc.
6. Setting diamonds in boring and cutting tools.
7. Manufacture of turbine blades and the like.
8. Manufacture of steel shavings for polishing floors, etc.
9. Miscellaneous features in metal working, e. g., manufacture of spurs, stove lifters, etc.

**CLASS 50.—MILLING, INCLUDING PRELIMINARY TREATMENT OF THE MATERIAL AND GENERALLY APPLICABLE COMMUNITING APPARATUS FOR INDUSTRIAL USE.**

**50a. Machines for Carrying Out Operations Preliminary to Grinding, as Washing, Steaming, Brushing, Decorticating, or Removing the Ends of the Grain, or Operations which Prepare the Grain for Market by Treatment of the Surface, e. g., Polishing Machines, also Pearling Mills.** (Polishing machines, gr. 3-6; hulling machines for grain, 45e, 21.)

1. Machines for separating particles of iron from grain.
2. Washing machines; also steaming and polishing apparatus for grain. (Cf. 45e, 22; 89a, 1.)
3. Grain scouring machines and similar machines, comprising disks.
4. Same, comprising drums or rollers.
5. Same, comprising beating mechanism.
6. Same, comprising brushes.
7. Grain scouring machines and similar machines of other kinds. (Cf. 34b, 7; 45e, 44, 45.)
8. Feeding and discharging apparatus for pearling mills. (Cf. 50b, 4.)

**50b. Buhr Mills Including Mill-stone Dressing Machines, Disk Mills, Mills Comprising Rubbing Plates, Bruising Mills, Coffee Mills, Spice Mills, Grain Cutting and Splitting Machines, Roller Mills for Grain, Disintegrators.** (Mills with rubbing plates, gr. 2, 9, 10; bruising mills, gr. 2, 6, 9; grain cutting and splitting machines, gr. 2, 6, 7, 9.)

1. Grinding processes.
2. Buhr mills and disk mills, also millstones, or the like, including cutting.
3. Ventilating features for buhr mills.

## 50b -Continued.

4. Feeding apparatus and samplers for buhr mills and roller mills, and mixing apparatus. (Cf. 50a, 8; 50f.)
5. Starting and stopping apparatus for buhr mills and roller mills, also alarm mechanism.
6. Roller mills, including those with concaves.
7. Rolls for roller mills.
8. Disintegrators [for disintegrating the flattened grain as it comes from the rolls].
9. Miscellaneous comminuting apparatus for grain and the like, exclusive of gr. 1 to 8. (Cf. 50c, 1.)
10. Coffee and spice mills. (Cone mills, 50c, 3.)
11. Picks and stone dressing machines for mill stones.

## 50c. Comminuting Apparatus Capable of General Application (exclusive of that in a and b), including Roller Disintegrators.

1. Miscellaneous comminuting apparatus for general use, exclusive of that for grain. (Cf. 50b, 9.)
2. Pendulum and mortar mills.
3. Cone mills. (Coffee mills, 50b, 10.)
4. Crushing mills, or stone crushers.
5. Ball and drum mills.
6. Centrifugal ball mills.
7. Chasing [Chilian] mills. (Cf. 80a, 3.)
8. Disintegrating rolls ("Brechwalzwerke"), [for grinding roots, etc., by action of knives and the like.]
9. Crushing rolls ("Quetschwalzwerke").
10. Drag mills ("Schleppmühlen"), [comprising rollers or runners which drag on the interior of a drum].
11. Impact pulverizers.
12. Rotary beater mills, exclusive of those for grain.
13. Stamp mills for ores, etc.

## 50d. Sifting and Grading Machines for Grain Mills, Middlings Purifiers. (Cf. 1a; 50b, 8.)

1. Rotary sifters.
2. Brush sifters.
3. Sifting machines with rotary beating mechanism.
4. Sifting machines with longitudinal reciprocating movement.
5. Sifting machines with parallel crank movement.
6. Screens, sifting brushes, conveying apparatus, and the like in connection with sifters.
7. Pneumatic sifters with screens.
8. Pneumatic sifters without screens (middlings purifiers).
9. Sifting machines with rotary air currents.
10. Sifting machines comprising scattering or distributing plates.

## 50e. Dust Collectors for Milling, and also, so far as Capable of General Application.

1. Dust collectors without filters. (Dust collectors for fabric cleaning apparatus, 8c.)
2. Dust collectors with filters.
3. Wet dust collectors.
4. Dust collectors with hose-shaped filters.

## 50f. Mixers for Dry Materials. (See also class 12c.)

1. Mixers for dry materials in general.
2. Mixers comprising fan blades, screws and the like.

## CLASS 51.—MUSICAL INSTRUMENTS.

## 51a. Pipe and Reed Organs.

1. Organ structure in general.
2. Electrically operated organs.
3. Blowing mechanism for pipe and reed organs.

## 51a -Continued.

4. Reed organs.
5. Instruments analogous to reed organs.
6. Stops and couplers for pipe and reed organs.
7. Wind chests in general for pipe and reed organs; mechanical and electrical actions.
8. Pneumatic-action wind chests for pipe and reed organs.
9. Valves and valve arrangements for pipe and reed organs.
10. Pipes, reeds, and the like for pipe and reed organs.

## 51b. Pianos.

1. Piano structure in general, e. g., unusual piano forms.
2. Frames, string plates and wrest planks.
3. Piano cases (as articles of furniture, 31i)

## RESONANCE APPARATUS FOR PIANOS. (Gr. 4-12.)

4. Sounding boards in general. (Cf. gr. 5-7.)
5. Double sounding boards.
6. Auxiliary sounding boards.
7. Resonators.
8. Sounding-board bridges.
9. Ribs and the like for sounding boards.
10. Fastening and mounting of sounding boards.
11. Tension devices for sounding boards.
12. Material for and treatment of sounding boards.

## STRINGING AND TUNING APPARATUS. (Gr. 13-14.)

13. Stringing.
14. Tuning pins in alignment with the strings.
15. Tuning pins transverse to the strings.
16. Miscellaneous tuning apparatus, exclusive of tuning pins. (Cf. 51c, 22.)

## KEYBOARDS AND THE LIKE FOR PIANOS. (Gr. 17-20.)

17. Keyboards comprising means for sustaining the tone, harmonic attachments, also children's keyboards.
18. Touch regulators.
19. Stepped keyboards.
20. Dummy keyboards, position and form of the keys, mounting of the keyboard, and its connection with the action.

21. Transposers and the like.
22. Octave couplers for pianos.

## PIANO ACTIONS, INCLUDING UPRIGHT AND GRAND. (Gr. 23-31.)

23. Hammer heads for piano actions.
24. Upright actions in general.
25. Upright actions with suspended jacks.
26. Upright actions with checks mounted upon the jacks.
27. Upright actions with special damping devices.
28. Upright actions with unusual mechanism.
29. Grand actions in general.
30. Grand actions with inverted jacks.
31. Grand actions of the Erard type.

## PEDAL MECHANISM FOR PIANOS. (Gr. 32-34.)

32. Apparatus for modifying the tone of pianos (harp pedals).
33. Piano and forte devices for pianos.
34. Pedals and pedal stools for pianos.



**51b—Continued.****MISCELLANEOUS MECHANISM IN CONNECTION WITH PIANOS. (Gr. 35-42.)**

35. Playing pedals for pianos
36. Harp pianos.
37. Piano violins. (Cf. 51c, 3; 51d, 24.)
38. Pianos with sustenuto devices, and pianos with electric actions.
39. Pianos combined with reed organs.
40. Pianos comprising sounding forks, plates, or the like.
41. Devices for supporting the fingers and arms of the player
42. Devices for strengthening the fingers and arms.

43. Tools and miscellaneous features in connection with piano structure, exclusive of gr. 1-42.

**51c. Orchestral Instruments, Including Plucked Instruments, Harmonicas, Accordions, Etc.****BOWED INSTRUMENTS, E. G., VIOLINS AND THE LIKE. (Gr. 1-12.)**

1. General structure of bowed instruments.
2. Unusual forms of bowed instruments.
3. Finger boards, including marks therefor, cello rests, and miscellaneous accessories.
4. Sounding boards and resonators (horns, diaphragms).
5. Sounding posts and bass bars.
6. Strings and string holders, storage of strings.
7. Bridges and mutes.
8. Tuning pegs
9. Bows
10. Violin supports, shoulder and chin rests.
11. Key mechanism and other apparatus for playing bowed instruments, so far as the music is controlled by the player only. (Cf. 51b, 37; 51d, 24.) Also mechanism for playing off the rough tone of bowed instruments
12. Bowed zithers.

**PLUCKED STRINGED INSTRUMENTS, E. G., HARPS, ZITHERS, AND THE LIKE. (Gr. 13-20.)**

13. Harps.
14. Mandolins, guitars, banjos, also key mechanism and capotasto devices.
15. Zithers in general
16. Appurtenances for zithers (finger boards, rings, mutes, supports, and harmonic arrangements).
17. Plucking and striking devices for zithers (key arrangements and tremolo mechanism).
18. Zithers, comprising bells, reeds, music sheets, and the like.
19. Autoharps with damping bars.
20. Autoharps with plucking arrangements.

21. The arrangement and fastening of the strings upon stringed instruments in general.
22. Tuning and untuning devices for musical instruments. (Cf. 51b, 16.)

**WIND INSTRUMENTS IN THE RESTRICTED SENSE. (Gr. 23-26.) (Harmonicas, gr. 27-29.)**

23. Wooden wind instruments (flutes, oboes, clarinets, bassoons, saxophones, ocarinas).
24. Brass wind instruments (trumpets and the like). General structure, mouthpieces and mutes.
25. Valves and valve arrangements for brass wind instruments.
26. Toy trumpets, and the like. (Cf. 51d, 23; 74d, 1.)

**51c—Continued.****HARMONICAS. (Gr. 27-29.)**

27. Harmonicas, general structure (cf. 51d, 23), also those with resonators.
28. Harmonicas combined with a plurality of instruments.
29. Harmonicas with a blow tube and movable mouth-piece.

**ACCORDIONS. (Gr. 30-35.)**

30. Accordions in general (mechanical players, 51d, 22).
31. Stops for accordions.
32. Bellows and fastening devices for accordions.
33. Accordion actions.
34. Double keyboards and special key arrangements for accordions.
35. Accordions with bells, flutes, drums, etc.

**PERCUSSION INSTRUMENTS. (Gr. 36-37.)**

36. Drums and cymbals.
37. Kettle drums.
38. Miscellaneous musical instruments, exclusive of gr. 1-37, including chimes, eolian harps, dulcimers. (Cf. 77g, 10.)

**51d. Mechanical Music Players. (See also class 43b.)**

1. Automatic players (orchestrions).

**HAND ORGANS, I. E., HURDY-GURDY TYPE. (Gr. 2-7).**

2. Hand organs with pin cylinders and pin boards.
3. Hand organs with perforated music belts and drop levers, general structure.
4. Hand organs with perforated music belts and drop levers, valve arrangements.
5. Hand organs with perforated music belts and sliding blocks.
6. Hand organs with disks, general structure and driving mechanism.
7. Hand organs with disks comprising means to shift the axis of the disk, and those with disks of different diameters.

**MUSIC PLAYERS COMPRISING COMBS, I. E., MUSIC BOXES. (Gr. 8-17.)**

8. Mechanical players with combs, general structure and tone-producing organs.
9. Devices for replacing and shifting the music cylinders in music boxes.
10. Devices for automatically replacing the music disks in mechanical players with combs.
11. Resetting and stopping apparatus for music boxes.
12. Striking mechanism for combs comprising star wheels and levers.
13. Striking mechanism for combs with levers only.
14. Miscellaneous striking mechanism for combs, exclusive of gr. 12-13.
15. Dampers of the edge damping type for striking mechanism with star wheels.
16. Dampers of the surface damping type for striking mechanism with star wheels, and other types of damping, exclusive of gr. 15.
17. Dampers for striking mechanism with levers (edge damping, surface damping, or other types).

18. Speed governors for mechanical players.

## 51d—Continued.

19. Chimes and sounding plate mechanism, also mechanical players with a variety of tone organs
20. Electrically operated mechanical players, and those with coin control. (Cf. 43b, 38.)
21. Note-indicating features for the music sheets and music cylinders of mechanical players.
22. Mechanical accordions. (Cf. 51c, 30-35.)
23. Mechanical harmonicas (cf. 51c, 27-29), also musical toys, rattles, and the like.
24. Mechanical bowed instruments. (Cf. 51b, 37; 51c, 3.)
25. Mechanical players in which the strings are struck.
26. Mechanical players in which the strings are plucked.

## MECHANICAL PLAYING APPARATUS FOR KEYED INSTRUMENTS. (Gr. 27-33.)

27. Mechanical playing apparatus with pin cylinders and pin boards.
28. Mechanical playing apparatus employing perforated music rolls and mechanical driving mechanism.
29. Devices for controlling expression in connection with mechanical players employing perforated music rolls and mechanical driving mechanism.
30. Electrically operated mechanical players.
31. Mechanical players with pneumatic-mechanical driving mechanism.
32. Mechanical players with purely pneumatic driving mechanism (pianolas, "Phonolas," etc.).
33. Devices for controlling expression for pianolas and the like.

## MISCELLANEOUS MECHANISM FOR MECHANICAL PLAYERS. (Gr. 34-37.)

34. Mechanism in general for mechanical players employing music rolls.
35. Mechanism for changing the width and for rerolling; reeling mechanism for mechanical players employing a music roll.
36. Mechanism in connection with mechanical players employing endless music sheets.
37. Mechanism for mechanical players employing a spiral or sectional music sheet.

## 51e. Musical Educational Appliances and Accessories

## MUSICAL EDUCATIONAL APPLIANCES AND THE LIKE. (Gr. 1-6.)

1. Time-indicating devices for music (beat indicators, metronomes, batons).
2. Tuning forks and other devices for giving the pitch.
3. Note-indicating devices [scales, charts, music cylinders, etc.].
4. Purely mechanical apparatus for recording played music, including music sheet punching machines.
5. Electric apparatus for recording played music, including music sheet punching machines.
6. Miscellaneous educational appliances for music, exclusive of gr. 1-5. (Cf. 51b, 41, 42.)

## MUSIC HOLDERS, TURNERS, AND THE LIKE. (Gr. 7-12.) (Cf. 70d, 9.)

7. Music holders and music desks. (Cf. gr. 8; 34i, 8.)
8. Music stands. (Cf. gr. 7; 34i, 15.)
9. Sheet music turners comprising a plurality of arms and automatically released turning mechanism.
10. Sheet music turners with a plurality of turning arms for turning by hand.

## 51e—Continued.

11. Sheet music turners with single turning arm, general structure.
12. Sheet music turners with single turning arm operated by means of a magnet or pneumatically.
13. Miscellaneous auxiliary appliances, also tools and implements in connection with music, exclusive of gr. 7-12. (Cf. 51b, 43; 51c, 4.)

## CLASS 52.—SEWING AND EMBROIDERY.

## 52a. Sewing.

1. Running-stitch sewing machines.

## CHAIN-STITCH SEWING MACHINES. (Gr. 2-3.)

2. Single-chain-stitch sewing machines
3. Double-chain-stitch sewing machines (of the Grove or Baker type)

## LOCK-STITCH SEWING MACHINES. (Gr. 4-7.)

4. Lock-stitch sewing machines with reciprocating shuttles
5. Lock-stitch sewing machines with looper shuttles.
6. Lock-stitch sewing machines with hooks
7. Lock-stitch sewing machines with large spools for the shuttle thread

8. Sewing machines for both chain and lock stitch

## SEWING MACHINES FOR ORNAMENTAL STITCHES (Gr. 9-11.)

9. Ornamental stitch sewing machines in general.
10. Hemstitch sewing machines.
11. Sewing machines for binding edges

12. Whip-stitch sewing machines.

## SEWING MACHINES FOR LEATHER, ESPECIALLY SHOES (Gr. 13-16.)

13. Chain-stitch sewing machines for leather, especially shoes.
14. Lock-stitch sewing machines for leather, especially shoes.
15. Cylinder machines for sewing in elastics.
16. Thread-waxing devices for leather machines.

## BUTTONHOLE MACHINES. (Gr. 17-20.)

17. Buttonhole machines in which the needle is moved transversely to the buttonhole slot.
18. Buttonhole machines in which the goods is moved transversely to the buttonhole slot.
19. Apparatus for barring the buttonhole.
20. Buttonhole cutting devices.

## SEWING MACHINES FOR SPECIAL USES. (Gr. 21-32.)

21. Sewing machines for straw hats.
22. Sewing machines for hat bindings
23. Machines for sewing on beads, hooks, and eyes.
24. Machines for sewing on shank buttons.
25. Machines for sewing on perforated buttons.



## 52a—Continued.

26. Machines for sewing straw cases or straw mats.
27. Machines for sewing in corset stays.
28. Sewing machines with rotary needles.
29. Sewing machines for making quilts and the like.
30. Sewing machines for darning. (Cf. 86c, 8.)
31. Carpet sewing machines.
32. Stitching machines for stitching together pairs of shoes, gloves, etc.

## DEVICES FOR MANIPULATING THE THREAD ON SEWING MACHINES. (Gr. 33-40.)

33. Tension devices for the needle thread.
34. Tension devices for the shuttle thread.
35. Thread feeders.
36. Thread-winding apparatus for sewing machines.
37. Bobbin holders.
38. Thread cutters and layers [lay the thread for ornamental stitch]
39. Threaders.
40. Needles, needle holders, needle setters, guards, needle bars for sewing machines. (Needle making, 7e, 1-6.)

## LOOP FORMERS FOR SEWING MACHINES. (Gr. 41-44.)

41. Reciprocating shuttles.
42. Looper shuttles.
43. Hooks.
44. Ejectors, bobbin cases, and bobbins.

## DEVICES FOR MANIPULATING THE GOODS ON SEWING MACHINES. (Gr. 45-54.)

45. Sewing machine feeding mechanism with rectangular movement.
46. Feeding mechanism with rotary movement.
47. Feeding mechanism, including stitch adjustment.
48. Continuously operating pressers.
49. Intermittently lifted pressers.
50. Combined pressers and feeders.
51. Devices on sewing machines for cutting the goods.
52. Hemmers, ribbon sewers, and braiders.
53. Tuckers and rufflers.
54. Devices for applying color along the seam.

## OPERATING MECHANISM FOR SEWING MACHINES. (Gr. 55-56.)

55. Driving mechanism for sewing machines.
56. Fly-wheel and driving-wheel clutches for sewing machines.

57. Sewing machine frames, tables, and chairs.
58. Miscellaneous features in the art of sewing, exclusive of gr. 1-57.
59. Devices for embroidering upon sewing machines.

## 52b. Embroidering (tapestries, class 25d, embroidering by sewing or with sewing machines, under a).

## EMBROIDERING MACHINES. (Gr. 1-3.)

1. Crank embroidering machines (of the Cornely or Bonnaz type).
2. Single-needle embroidering machines.
3. Multiple-needle embroidering machines.

## ELEMENTS OF AND APPARATUS IN CONNECTION WITH EMBROIDERING MACHINES. (Gr. 4-9.)

4. Embroidery frame guides.
5. Thread and pattern changing for embroidering machines.

## 53b—Continued.

6. Boring apparatus for embroidering machines.
7. Festoon-stitch apparatus for embroidering machines.
8. Thread-tension devices for embroidering machines.
9. Needle-fastening and needle-inserting apparatus for embroidering.

## MISCELLANEOUS FEATURES IN EMBROIDERING. (Gr. 10-13.)

10. Embroidery, backgrounds, corroded embroidery. [Background removed by use of chemicals.] (Trimming and cutting out lace embroidery, 8f, 9.)
11. Devices for embroidering materials with thread loops.
12. Thread inserting and knotting machines for embroidery. (Needle-threading machines.)
13. Hand-embroidering implements, e. g., embroidery patterns

## 14. Miscellaneous features exclusive of gr. 1-13.

## CLASS 53.—FOODSTUFFS, SO FAR AS NOT PROVIDED FOR IN SPECIAL CLASSES.

## 53a. Vehicles, with Special Arrangements for Preservation of Foodstuffs (cf. 17c, 5.) (Without separate groups.)

## 53b. Preserving Vessels and Sterilizing Stoppers. (Preserving cans and can closures, 64a, 56-64.)

1. Preserving vessels.
2. Sterilizing stoppers for bottles.
3. Sterilizing closures for other receptacles than bottles. (Cf. gr. 2.)
4. Holders for sterilizing stoppers. (Cf. gr. 2-3.)

## 53c. Preservation of Meat, Eggs, Fruits (exclusive of stacks, etc., for storing crops in the field, class 45c), Flour and Bread.

1. Preserving meat by smoking and drying.
2. Preserving meat by salting or pickling.
3. Preserving meat by other methods than smoking, drying, salting, or pickling.
4. Preserving eggs (egg preparations).
5. Preserving fruits, vegetables, bread, flour (bleaching and sterilizing of flour). (Cf. 45e, 21.)

## 53d. Coffee and Coffee Substitutes, Roasting Apparatus (see class 82a), also Machines for Cutting Chicory.

1. Methods of roasting coffee and coffee substitutes.
2. Preserving coffee by application of coatings (glazing or candying coffee), or by other means.
3. Coffee preparations and extracts (fluid or solid).
4. Coffee substitutes.
5. Machines for cutting chicory.

## 53e. Milk Treatment, Including Pasteurizing, Sterilizing and Preserving, Milk Preparations, Dairy, Chemical Features (mechanical features, class 45g).

1. Pasteurizing and sterilizing milk in bottles. (Cf. 30i, 1-2.) (Pasteurizing beer and wine, 6d, 1.)
2. Pasteurizing and sterilizing milk in larger containers than bottles. (Cf. gr. 1.) (Pasteurizing beer and wine, 6d, 2.)
3. Preserving milk. (Preserving beer and wine, 6d, 3.)

## 53e -Continued.

4. Condensing or concentrating milk (also milk powders).
5. Milk preparations, substitutes for mothers' milk. (Cf. gr. 4.)
6. Dairy, chemical features (making and preserving butter and cheese, and storing, 45g, 24), testing processes, e. g., determining the fat in milk, and the like. (Cf. 421, 5.)

## 53f. Cocoa, Chocolate, and Confectionery. (Machines under 1.)

1. Cocoa, chemical features including processes of opening, fermenting, removing fats or bitter elements, roasting, and cooling.
2. Cocoa and chocolate preparations.
3. Manufacture of confectionery, chemical features. (Mechanical features, 531.)

## 53g. Stock Feed and Feed Cookers.

1. Feed from molasses.
2. Feed from blood.
3. Feed from distillery waste.
4. Stock feed of other materials not mentioned in gr. 1 to 3. (Cf. 45e, 21.)
5. Removing bitter elements from stock feed, e. g., from lupines.
6. Feed cookers.

## 53h. Artificial Butter, e. g., Oleomargarine, and Cooking Fats. (See also class 23a.)

1. Artificial butter and cooking fats, chemical features (processes).
2. Artificial butter and cooking fats, mechanical features (apparatus for working, mixing, cooling, molding, and cutting of oleomargarine or artificial butter). (Cf. 45g, 23.)

## 53i. Albuminous Materials and Concentrated Foods.

1. Extraction and purification of albuminous materials for use as foods.
2. Albuminous preparations or decomposition products of albumin which serve as foodstuffs, e. g., making of albumose. (Albuminous preparations for medicines, 30h, 8; albuminous materials in general, combinations and derivatives, 12p, 16.)
3. Making albuminous materials, extracts, or the like, from yeast.
4. Concentrated foodstuffs.

## 53k. Preparation and Preserving of Foodstuffs so far not Previously Indicated. (Noodle cutting machines and implements, class 2b.)

1. Preserving and preparation of foodstuffs so far as not indicated under 53e-i.
2. Manufacture of flour and bread preparations, e. g., potato flours, and breads containing animal albumen, nutritive salts, and the like. (Cf. 2c, 1.)
3. Tea and tea extracts.

## 53l. Machines and Implements for Making Confectionery, e. g., Cocoa, Chocolate, Candy.

1. Molding machines for confectionery.
2. Hand molds for confectionery.
3. Shaking tables for molding confectionery, especially chocolate.
4. Machines and implements for coating confectionery by dipping, or by applying covering material.
5. Machines and implements for filling confectionery.

## 53l -Continued.

6. Machines and implements for ornamenting confectionery.
7. Machines and implements for cleaning confectionery.
8. Candy working machines.
9. Machines and implements for cutting chocolate, candy, and the like.
10. Mixing, comminuting and pressing apparatus for cocoa, chocolate, and the like.
11. Apparatus and machines for measuring, weighing, and wrapping confectionery. (Independent wrapping machines for confectionery, 81a, 7, 16.)
12. Apparatus for cooking, cooling, and drying confectionery.
13. Miscellaneous features in connection with the manufacture of confectionery.

## CLASS 54.—PAPER AND PAPER BOARD MANUFACTURES (exclusive of bookbinding, class 11), ALSO ADVERTISING.

## 54a. Manufacture of Paper Boxes, Including Preliminary Operations.

## PRELIMINARY OPERATIONS FOR THE MANUFACTURE OF PAPER BOXES. (Gr. 1-3.)

1. Scoring and grooving paper board by means of rotary knives, with or without shaping cutters, circular saws, or grooving rollers.
2. Upsetting and bunching up paper.
3. Stamping out, beveling, forming corners, and cutting out paper.

## FORMING PAPER INTO BOXES. (Gr. 4-7)

4. Paper-box machines in general.
5. Processes for making paper boxes.
6. Machines for making slide boxes.
7. Stamp presses and draw presses for box making.

## METAL FASTENERS FOR MAKING PAPER BOXES. (Gr. 8-11.)

8. Metal fasteners.
9. Machines for affixing clamp strips.
10. Machines for affixing separate fasteners.
11. Machines for affixing wire fasteners.

## GUMMING MACHINES FOR MAKING PAPER BOXES. (Gr. 12-13.)

12. Box gumming machines.
13. Edge and corner gumming machines.

## 54b. Manufacture of Envelopes, Paper Bags, Wrappers, Post Cards, Letter Cards, Postal Orders, Bills, Printed Forms, Parcel Addresses, Labels, and the Like.

1. Envelope machines.
2. Envelopes, card letters, letter sheets, etc.
3. Paper bag machines.
4. Paper bags and the like, and closures for the same.
5. Post cards.
6. Wrappers, parcel addresses, etc.
7. Printed forms (formulas, bills, stamps, bookkeeping forms, etc.).
8. Tags and machines for making the same. (Cf. 8f, 13; 81c, 17.)



**54c. Manufacture of Spools and Cases, also of Tubes, by Winding or Rolling Paper or Paper Board (making wrappers and mouthpieces for cigarettes, class 79b).**

1. Manufacture of separate tubes.
2. Continuous paper tube making.
3. Paper cases with bottoms. [Cylindrical cartons]
4. Manufacture of spools (winders, cops, conical cases, etc.), by winding paper. (Cf. 76d.)

**54d. Manufacture of Fancy Paper, Cardboard, or the Like by Means of Rollers or Press Plates, Stamping and Perforating Apparatus of General Application (when no material is mentioned or when other materials besides paper and cardboard are mentioned), Pleated and Crêpe Paper, Application of Adhesives to Paper and Cardboard, Making Lace Paper, Pleated Capsules and Lamp Shades, the Preparation of Paper and Cardboard for Packing Purposes.**

1. Ornamenting or embossing paper, cardboard, and the like by means of rollers and press plates.
2. Stamping out paper, cardboard, and the like.
3. Perforating paper, cardboard, and the like (paper perforators for portfolios, 11c, 8; perforating stamps, 15h, 2; making music sheets or music rolls, 7c, 31; 51d, 32; 51e, 4, 5).
4. Folding or pleating of paper, cardboard, and the like.
5. Folding machines (for lamp shades), pleated capsules of paper, cardboard, or the like.
6. Application of adhesives and the like to paper and cardboard (cf. 11c), the making of honeycomb paper and paper for garlands, etc.
7. Lace paper, embroidery imitations upon paper, etc.
8. Fringe cutting and cutting out designs upon the edges of paper and cardboard.
9. Packing material, corrugated board, crêpe paper.

**54e. Manufacture of Articles from Papier-Mâché (without special groups).**

**54f. Miscellaneous Articles, e. g., Plates, Dishes, Casks, etc., of Paper and Cardboard (without special groups).**

**54g. Advertising, Including Merchandise Receptacles, not Coin Controlled, Provided They Serve for Advertising or Display Purposes.**

**SIGNS. (Gr. 1-12.)**

1. Signs on special articles, for restaurants, wall coverings, match boxes, and advertising pillars.
2. Directory signs and exhibiting receptacles.
3. Menu or place card holders, placard frames.
4. The display of advertising matter upon charts, disks, and sheets.
5. The display of advertising matter upon belts.
6. The display of advertising matter upon cylinders or drums.
7. The display of advertising matter in other ways than according to gr. 4-6.
8. The display of signs upon advertising vehicles.
9. Advertising by the use of light. (Cf. gr. 10-12; 74d, 11.)
10. Special acoustical and optical apparatus for advertising and arrangements for attracting attention. (Cf. gr. 9.)
11. Advertising sign plates and name plates.
12. Special forms of separate letters for name plates, especially as relates to the fastening, to durability, to light effects, transparency, and ornamentation. (Cf. 74d, 1-4, 11; 75d, 1-4.)

**54g—Continued.**

**EXHIBITING ARRANGEMENTS FOR ADVERTISING. (Gr. 13-22.) (Cf. 43b, 35-37; 77g, 9-10.)**

13. Delivery cabinets, merchandise receptacles, and automatic venders, not coin controlled, for advertising or display purposes.
14. Advertising card dispensers with display arrangements.
15. Paper dispensers with arrangements for exhibiting printed advertising matter. (Cf. 70e, 18.)
16. Show case and show window equipment (cf. 37d), pattern cards and charts. (Button cards, 44a, 20.)
17. Receptacles and stands for jewelry, teeth, and the like for display purposes.
18. Nonadjustable display stands (including rotary).
19. Adjustable and collapsible display stands.
20. The display of pictures, carpets, wall paper, and the like. (Cf. gr. 4-7.)
21. The display of articles of any desired form.
22. Label holders, clamps, and the like for display purposes. (Cf. 8f, 13; 81c, 17.)

**CLASS 55. MANUFACTURE OF PAPER AND PAPER BOARD.**

**55a. Comminuting and Other Preparation of the Raw Materials, e. g., Beating, Sorting, Cutting, and Dusting Rags and Old Paper, Treatment of Peat, Wood and Straw Cutters, Wood Grinding, and the Like.**

1. Wood grinders for paper making, wood grinding processes, storing and preservation of wood pulp.
2. Wood graters for paper making. (Cf. 38a, 4-6; 38i, 4.)
3. Comminuting apparatus and separators or the like for wood for use in paper making. (Cf. 38a, 4-6; 38i, 4.)
4. Comminuting apparatus and separators or the like for peat for use in paper making. (Cf. 10c, 5; 29a, 5; 29b, 2.)
5. Miscellaneous comminuting apparatus, working and mixing machines for miscellaneous raw materials for paper making, exclusive of wood and rags. (Cf. 80a, 2-3.)
6. Dusters and washers for rag cleaning for use in paper making.
7. Rag cutters for use in paper making. (Cf. 50c; 76b, 1.)

**55b. Digesters for Rags and Other Materials, Methods of Digesting, Manufacture of Paper Pulp by Chemical and Electrolytic Processes, Utilization of Waste Liquors and Gases. (See also class 12.)**

1. Extraction of cellulose from wood, rags, straw, waste, tobacco ribs, etc., for use in paper making. "Braunschliiff."
2. Digesters and digestive processes for paper making.
3. Recovery of the waste liquors and gases and making them noninjurious; also miscellaneous features in the manufacture of cellulose.
4. Working of old paper.

**55c. Hollanders [beating engines], and Treatment in Hollanders; Bleaching, Sizing, Coloring, and Loading the Pulp; Pulp-Working Engines, Cellulose Separators.**

1. Bleaching of fibrous materials used in paper making.
2. Sizing, including sheet sizing, in paper making.
3. Filling, coloring, loading, etc., of the pulp.
4. Hollanders, bed plates and cutter cylinders for hollanders.

## 55c—Continued.

5. Hollanders comprising devices for producing rapid circulation of the pulp.
6. Elements of hollanders.
7. Hollanders with vertical movement of the pulp and underdrive hollanders.
8. Miscellaneous hollanders, bleaching engines, and pendulum mills, exclusive of gr. 4-7.
9. Pulp-working engines and refining engines for paper making. (Cf. 50b, 2; 50c.)
10. Stamp mills and edge-roller mills for paper making. (Cf. 50c, 13; 80a, 2-3.)
11. Centrifugal apparatus, cellulose separators, and washers for use in paper making.
12. Apparatus for breaking or loosening up the fiber for use in paper making [as for blotting paper or filter paper].

**55d. Paper-Making Machines and Work Upon the Paper-Making Machines. Strainers and Separators, Drying Apparatus, Sizing the Paper Web (calendering, cutting, and winding under e), Handwork.**

1. Rotary separators for paper making [wood-fiber separators]. (Cf. 1a, 15-21; 50d.)
2. Centrifugal separators for paper making. (Cf. 1a, 15-21; 50d.)
3. Separators with flat screens for paper making. (Cf. 1a, 15-21; 50d.)
4. Miscellaneous separators for paper making, exclusive of gr. 1 to 3. (Cf. 1a, 15-21; 50d.)
5. Rotary strainers for paper making.
6. Flat strainers for paper making.
7. Miscellaneous strainers for paper making, exclusive of gr. 5-6.
8. Parts relating to the wire cloth and means for keeping it in register, including shaking apparatus.
9. Cleaning of paper machines, wire and felts; also spray tubes.
10. Wires and felts. (Cf. 7d, 6; 86f.)
11. Wire, felt, and web guides.
12. Magnetic rakes and sand catchers.
13. Pulp catchers.
14. Pulp regulators and stuff chests.
15. Slice bars, feeding mechanism, and deckle straps.
16. Suction boxes and miscellaneous devices for removing water.
17. Water marks.
18. Screen cylinders for paper making.
19. Dandy rolls.
20. Couch rolls and wet presses.
21. Paper-board machines (endless and cylinder); also signal devices for paper-board machines.
22. Fourdrinier machines.
23. Cylinder machines.
24. Pulp stirrers.
25. Driving mechanism for paper machines.
26. Perforating the web in paper making.
27. Miscellaneous features in connection with paper machines (also handwork).
28. Drying cylinders for paper and paper board; also for coated and gummed paper and board. (Cf. 82a.)
29. Driers without drying cylinders for paper webs. (Cf. 82a.)
30. Sheet hangers on paper-drying mechanism. (Cf. 82a.)
31. Miscellaneous drying apparatus for paper, e. g., centrifugal driers. (Cf. 82a.)

**55e. Calendering Rolls, Calenders and Glazing Mechanism, Longitudinal and Transverse Cutters, Winding Apparatus, Moisteners, Paper-Rolling Machines.**

1. Calenders and glazing rolls for paper making. (Cf. 8b, 19-20.)

## 55e Continued.

2. Polishing apparatus for paper making. (Cf. 8b, 19-20.)
  3. Moisteners for paper making. (Cf. 8a, 1-2.)
  4. Longitudinal cutters for paper machines. (Cf. 8f, 9.)
  5. Transverse cutters for paper machines. (Cf. 8f, 8.)
  6. Diagonal cutters for paper machines. (Cf. 8f, 8.)
  7. Rolling and rerolling paper webs, crease removers, and lateral stretchers for paper webs.
  8. Longitudinal, transverse, and diagonal cutters. (Cf. 8f, 8-9.)
- 55f. Making up Paper into Carton, Fancy Paper, Gold and Silver Paper, etc., Parchment Paper, Impregnated Paper.** (Roofing paper, class 81, and wall paper, class 8c, h, 1.)

1. Making of carton paper and paper-covered paper board from finished paper (and upon the paper machine), also machines for gluing together.
2. Making fancy paper from finished paper [colored or decorated paper].
3. Making marbled paper from finished paper.
4. Coloring and marbling upon the paper machine, also making of paper with special designs. (Cf. gr. 16.)
5. Conveying apparatus for wet paper webs.
6. Miscellaneous features in the manufacture of fancy paper and the like.
7. Making parchment paper and parchment.
8. Paper and paper board with fabric inserts and coverings.
9. Safety paper.
10. Paper board for walls.
11. Waterproof, fireproof and fat-proof paper.
12. Making filter mass, filter paper, and blotting paper.
13. Metal-covered paper, e. g., gold and silver paper.
14. Artificial leather from paper pulp. (Cf. 81, 2; 39a, 24; 39b, 12.)
15. Drawing paper, tracing paper, copying paper, carbon paper, printing and transfer paper.
16. Miscellaneous papers and paper boards. (Cf. gr. 4.)

**CLASS 56.—HARNESS FOR HORSES AND OTHER ANIMALS.**

- 56a. Harness, Devices for Preventing Runaways, Devices for Hitching and Unhitching Quickly, Training and Tethering Apparatus, Rein Holders, Devices for Lightening the Horse's Work, Whips, etc.**

**HARNESS AND HARNESS PARTS. (Gr. 1-2.)**

1. Complete harness for draft animals and hangers for the same.
2. Buckles and loops for harness. (Cf. 44a, 27-29.)

**COLLARS. (Gr. 3-7.)**

3. Nonadjustable collars.
4. Adjustable collars.
5. Collars with air cushions and spring cushions. (Cf. gr. 10.)
6. Collar fastenings and means for fastening the traces to the collar.
7. Manufacture of collars (saddlery in connection therewith, 63a).

**MISCELLANEOUS PARTS OF FRONT HARNESS, EXCLUSIVE OF COLLARS. (Gr. 8-10.)**

8. Breast bands for harness.
9. Yokes.
10. Back pads or housings.



## 56a—Continued.

## BRIDLES, REINS AND APPURTENANCES. (Gr. 11-19.)

11. Bridles, bits for the same, and halters.
12. Rein arrangements, guides on the harness for reins and drag lines, also check reins and hooks for check reins.
13. Rein holders and locks on the harness. (Cf. 63b, 42.)
14. Blinds.
15. Devices in connection with harness for covering the horse's eyes to prevent his running away. (Cf. 63b, 26.)
16. Runaway preventers operating by strangling the horse. (Cf. 63b, 26.)
17. Runaway preventers operating by fettering the legs, by means of electric shocks, etc. (Cf. gr. 26, 63b, 26.)
18. Devices on the harness for detaching runaway horses. (Cf. 63b, 23.)
19. No patents.

## REAR HARNESS, BREECHING, AND APPURTENANCES. (Gr. 20-21.)

20. Rear harness, cruppers, and breeching.
21. Sand-scattering devices in connection with harness.

## TRACES AND APPURTENANCES. (Gr. 22-25.)

22. Traces and trace straps.
23. Hooks and connectors for traces and other harness parts. (Cf. 45h, 3; 47d, 15, 16; 63b, 22.)
24. Devices in connection with harness parts for lightening the work of the horse. (Cf. 63b, 27.)
25. Trace supports on the harness and supports for the shaft or pole.

26. Devices for tethering (cf. 30c, 5; 45h, 9; 66a, 4) and devices for training saddle and draft animals.
27. Whips and whip holders on the harness. (Cf. 63b, 42.)

## 56b. Saddles and Stirrups (bicycle saddles, class 63g).

## SADDLES AND APPURTENANCES. (Gr. 1-8.)

1. Saddles with air cushions.
2. Saddles with spring cushions.
3. Sidesaddles.
4. Adjustable saddles.
5. Nonadjustable saddles and pack saddles.
6. Underpads for saddles.
7. Saddle trappings and coverings for harness animals. (Cf. 63b, 3.)
8. Girths and tighteners.

## STIRRUPS AND APPURTENANCES. (Gr. 9-12.)

9. Fixed stirrups.
10. Releasable stirrups.
11. Means for fastening the stirrup to the saddle.
12. Pockets on the saddle or stirrups for weapons, etc.

## CLASS 57.—PHOTOGRAPHY.

## 57a. Cameras and Accessories, Including Shutters, Automatic Cameras, and Moving-Picture Apparatus. (Objectives and optical accessories, class 42h.)

## CAMERAS AND ACCESSORIES. (Gr. 1-25.)

1. General arrangement of cameras.
2. Flat cameras without beds.

## 57a—Continued.

3. Folding cameras which open in the manner of a book.
4. Double cameras. (Stereoscopic cameras and the like.)
5. Cameras for reproducing, reducing cameras.
6. Panoramic cameras.
7. Cameras of special forms (concealed cameras) and for special purposes (balloon cameras, cameras for photographing interior parts of the body, etc.). (Cf. 30a, 1.)
8. Cameras for color photography and apparatus for reproducing colored photographs.
9. Reflecting cameras and finder arrangements. (Cf. 42h, 33.)
10. Camera accessories (lens boards, bellows, backs, focusing hoods, tripods, so far as they are limited by special construction to photographic use, e. g., for studio or copying cameras). (Tripods in general, 42c, 1-3.) Miscellaneous.
11. Photographic plate or film holders (indicating devices, plate holders, locking arrangements).
12. Multiple picture attachments for photographic purposes.
13. Changing devices, including attachable magazines.
14. Loading packages for plates or films.
15. Changing devices comprising multiple magazines.
16. Changing devices comprising separate chambers for manipulating the plates.
17. Changing devices comprising magazines which may be drawn out.
18. Changing devices with pivoted plates.
19. Changing devices with horizontal magazines and means for raising the plates into position.
20. Miscellaneous changing devices for cameras (movable plate stacks around which the plates are guided, plates with offset projections, etc.).
21. Changing devices for film packs.
22. Roll cameras, general arrangement.
23. Spools and spool supports, marking and numbering devices for roll cameras.
24. Combined roll and plate cameras.
25. Changing devices connected to the shutter.

## PHOTOGRAPHIC SHUTTERS. (Gr. 26-32.)

26. Simple sliding or rotary shutters.
27. Roll shutters (structure of the curtain and of the aperture, curtain rollers, and the like).
28. Curtains with adjustable width of aperture.
29. Double sliding shutters (opposed, tandem, telescopic).
30. Iris shutters and diaphragms for cameras. (Cf. 42h, 33.)
31. Miscellaneous shutters, exclusive of gr. 26-30.
32. Operating mechanism and releasing devices for shutters, devices for measuring speed.

## APPARATUS FOR MOVING PICTURES OR PHOTOGRAPHIC SERIES APPARATUS. (Gr. 33-37.)

33. Series apparatus with intermittently moved film ribbons.
34. Series apparatus with pictures upon rectangular or round plates or upon drums.
35. Series apparatus with pictures on separate leaves (mutascopes).
36. Series apparatus for stereoscopic and multicolor pictures.
37. Elements for series apparatus, including optical compensation for the movement of pictures, shutters, regulation of the film in the aperture, double apparatus for preventing flickering, means for protection against fire, combinations of series apparatus with other display apparatus, films for cinematographs. (Cf. 42g, 11.)

## 57a—Continued.

38. Cameras combined with self-contained developing equipment.
39. Automatic photographing apparatus. (Cf. 43b.)

## 57b. Photographic Processes, Printing, Sensitive Plates and Papers, Color Photography, Roentgen-Ray Photography, Photo-Sculpture.

## PHOTOGRAPHIC PLATES AND PAPERS. (Gr. 1-11.)

1. Transparent backings for pictures, especially for negatives, exclusive of gr. 2-3. (Manufacture of films so far as they serve solely for supports for sensitive coatings, 39b, 8.)
2. Roll films, protecting strips, also packing material for sensitive plates, films, and papers.
3. Stripping films and stripping papers.
4. Nonhalation means for photographic plates.
5. Photographs, especially positives, upon other backings than paper, or upon special papers.
6. Application of sensitive coatings. (Cf. 57c, 5.) Preliminary treatment of the backing.
7. Plates for drawing negatives (engraving plates) for photographic purposes. (Cf. 57d, 1.)
8. Sensitive coatings containing silver salts for the negative process, also developing plates, sensitizing.
9. Sensitive coatings containing precious-metal salts for the positive process, including self-toning papers.
10. Sensitive coatings containing various materials, exclusive of gr. 8-9 and 11.
11. Printing papers. (Cf. gr. 15.)

## PHOTOGRAPHIC PROCESSES. (Gr. 12-18.)

12. Complete processes and miscellaneous processes relating to a part of the photographic operation, also Roentgen-ray photography.
13. Developing, intensifying, softening, and copying photographic pictures.
14. Chemical modification of photographic pictures, including toning, inverting, photographic contact processes, such as ozotypy and catatypy. (Cf. 57d, 9.)
15. Cromate processes. (Cf. gr. 20.)
16. Vitreous color processes. (Cf. gr. 20.)
17. Finishing photographs, including retouching and coloring.
18. Color photography, including color filters and gratings. (Gratings in general, 57d, 8.)
19. Reproduction of relief forms by the aid of photography (photo-sculpture).
20. Photographic transparencies (lithophanes, Woodbury types). (Cf. gr. 15-16.)

## 57c. Appliances and Machines, Dark Rooms.

## PHOTOGRAPHIC APPLIANCES AND MACHINES. (Gr. 1-13.)

1. Photographic studios, arrangement and equipment.
2. Illuminating devices for photographic purposes. (Cf. gr. 3.)
3. Flash-light apparatus for photographic purposes. (Cf. 78d, 2.)
4. Photometers for photographic purposes (exposure meters). (Photometers in general, 42h, 17.)
5. Devices for coating photographic plates, films, and papers with sensitive layers. (Cf. 57b, 6.)
6. Plate boxes, holders, stands, and numbering apparatus, film stretchers and receptacles.

## 57c—Continued.

7. Apparatus for developing photographic plates.
8. Apparatus for developing roll films (hand apparatus and machines for continuous operation).
9. Washing apparatus for plates and the like; also drying apparatus.
10. Photographic printing frames, printing lamps, and cylindrical printing apparatus, vignettes.
11. Photographic printing machines (flat and rotary). (Cf. 15i, 2.)
12. Burnishing machines for photographs. (Cf. 55e, 1.)
13. Appliances for retouching and finishing photographs.

14. Photographic dark rooms; lamps and other appliances for the same.

## 57d. Photomechanical Reproduction.

(Etching apparatus, 48d, 1.)

1. Making special originals and negatives for photomechanical reproduction, e. g., by photomechanical type. (Cf. 57b, 7.)
2. Making printing designs for photomechanical printing forms in general, e. g., for drawings, phototypy, and the like, without special processes operating upon printing grain. (Cf. 15b, 1.)
3. Making color-printing forms for photomechanical printing. (Cf. 15b, 3; 57b, 18.)
4. Making photomechanical printing forms for special design effects. (Cf. 15b, 4.)
5. Making printing forms for photomechanical reproduction upon other than plane plates, especially upon cylinders. (Cf. 15b, 5; 15d, 33.)
6. Making printing grain for photomechanical printing forms in general, e. g., for autotypy, photolithographic half tone printing, etc. (Cf. gr. 7; 15b, 16.)
7. Making printing grain upon photomechanical printing forms with special manipulation, e. g., formation of the printing grain for certain special purposes, as clearing up the lights, etc.
8. Diaphragms and gratings for photomechanical reproduction. (Cf. 42h, 33; 57a, 30.) (Color gratings, 57b, 18.)
9. Photomechanical printing processes, including catatypy and the like. (Cf. 15k; 57b, 14.)
10. Other kinds of photomechanical reproduction than by printing, e. g., transmission of photographic pictures to a distance, etc. (Cf. class 21a, 8 and 50.)

## CLASS 58.—PRESSES. (Filter presses, class 12d.)

## 58a. Presses Operated by Fluid Pressure.

1. Hydraulic presses in general. (Cf. gr. 5-8; 7c, 16; 49c, 8; 80a, 14.)
2. Pump mechanism for hydraulic presses.
3. Control mechanism and valves for hydraulic presses.
4. Hydraulic accumulators.
5. Hydraulic plunger presses.
6. Hydraulic molding presses. (Cf. 80a, 14.)
7. Hydraulic oil presses.
8. Miscellaneous mechanism for hydraulic presses, exclusive of gr. 1-7.

## 58b. Presses Operated Otherwise Than by Fluid Pressures.

1. Lever presses in general.
2. Presses with screw spindles in general.



## 58b—Continued.

3. Ratchet mechanism for presses with screw spindles.
4. Rack-and-pinion presses
6. Presses with endless belts
7. Eccentric [cam] presses in general. (Cf. 80a, 11.)
8. Wedge operated presses
9. Screw presses for moist materials in general. (Cf. 10c, 7; 80a, 25; 89b, 5-6.)
10. Plunger presses for fruits and the like. (Cf. 58a, 5.)
11. Mechanically operated oil presses. (Cf. 58a, 7.)
12. Molding presses in general. (Cf. 80a.)
13. Lozenge presses. (Cf. 30g, 7.)
14. Baling presses in general. (Hay and straw presses, 45e, 23-28.)
15. Presses with counteracting springs.
16. Safety devices for presses. (Cf. 47a, 18.)
17. Miscellaneous mechanism for mechanically operated presses, exclusive of gr. 1-16.

**CLASS 59.—PUMPS AND OTHER FLUID LIFTING MECHANISM.** (Cock, valve, and slide valve structure, 47g.)

**59a. Pumps with Reciprocating Pistons and Diaphragm Pumps, Including Piston Pumps for Fire Engines.** (Pressure equalizers, 14g.)

1. Piston pumps in general (cf. 46c, 13; 47e, 22-24), tubular-well and deep-well pumps, feed-water pumps, hot-water pumps, and pumps for the removing of material from receptacles under reduced pressure (cf. gr. 13), pumps for viscous and impure materials, acid pumps, pumps without separate valves (piston acting as valve), pumps which utilize energy of movement of the fluid, miscellaneous
2. Hand-operating mechanism for piston pumps.
3. Piston pumps operated by pressure mediums, including steam pumps (cf. 14d), compressed-air pumps (cf. 46d, 5), and hydraulic motor pumps (cf. 88b, 1), so far as the pump is concerned.
4. High-speed piston pumps.
5. Piston pumps with valve gears.
6. Pumps in which the power is communicated by means of fluid columns. (Cf. 47h, 18-22.)
7. Mine pumps (pump-rod compensating).
8. Multi-cylinder pumps with rotary cylinders or rotary driving mechanism.
9. Automatic regulation of piston pumps, including apparatus for automatically starting and stopping upon reaching the limits of pressure (cf. 21c, 53; 58a, 2), safety devices, distribution of the fluid to different conduits (cf. 47e, 27-29), and regulation of the amount distributed (cf. 46c, 6, 7), miscellaneous.
10. Special driving mechanism for piston pumps.
11. Pump parts. (Pistons, 47f, 19; stuffing boxes, 47f, 23-26.)
12. Diaphragm pumps and flexible tube pumps.
13. Piston pumps for fire engines. (Cf. 45f, 21; 61a, 15.)

**59b. Centrifugal Pumps.**

1. Single chamber centrifugal pumps.
2. Multiple chamber centrifugal pumps.

**59c. Pulsometers and Compressed-Air Water Raisers, Jet Pumps, Hydraulic Rams.**

**PULSOMETERS AND THE LIKE.** (Gr. 1-3.)

1. Pulsometers in general.
2. Control mechanism for pulsometers.
3. Steam water-raising mechanism (for feeding boilers, 13b, 10-12.)

## 59c—Continued.

**COMPRESSED-AIR WATER RAISERS AND THE LIKE.** (Gr. 4-10.)

4. Compressed-air water raisers in general, and control mechanism for the same.
5. Successive-lift water raisers operated by compressed air.
6. Aerated column water elevators.
7. Compressed-air raisers for acids. (Cf. acid siphons, 12f, 1.)
8. Explosion water elevators.
9. Compressed-air elevators of various kinds, exclusive of gr. 4-7.
10. Water-elevating plants.

**JET PUMPS.** (Gr. 11-16.)

11. Single steam-jet pumps or injectors. (Cf. 13t, 12; 27d, 1-2.)
12. Double steam-jet pumps or injectors.
13. Regulation of steam-jet pumps or injectors.
14. Restarting steam-jet pumps or injectors.
15. Exhaust steam-jet pumps or injectors.
16. Water-jet pumps. (Water-jet air pumps for laboratories, 27d, 1.)

**17. Hydraulic Rams.**

**59d. Bucket Pumps, Bucket Wheels, and Other Water-Lifting Mechanism.**

1. Bucket pumps. (Bucket pumps for oil, 47e, 26.)
2. Bucket wheels.
3. Water-lifting mechanism of various kinds, exclusive of gr. 1-2; chain pumps.

**59e. Pumps With Rotary or Oscillating Pistons.** (Cf. 14b, 1-9; 14c, 3; 27c, 1, 2, 3, 11; 46a, 23, 24.)

1. Screw pumps.
2. Rotary intermeshing piston pumps.
3. Pumps with rotary piston vanes.
4. Pumps including provisions for use as motors.
5. Pumps with oscillating piston vanes.

**CLASS 60.—GOVERNORS FOR ENGINES OR MOTORS.**

1. Transmission devices, adjusting mechanism, cataracts, throttling, and regulating devices for engines or motors.
2. Spring-loaded governors.
3. Weight-loaded governors.
4. Governors with weights shiftable upon the weight arms.
5. Pendulum governors without special loading devices.
6. Special forms of pendulum governors (balls, centrifugal rings, fluid centrifugal masses, etc.).
7. Load governors [e. g., actuated by the pressure produced by the driven pump, etc.].
8. Fluid-resistance governors [controlled by a fly brake, by a screw in a fluid chamber, etc.].
9. Brake governors.
10. Governors with disconnecting devices.
11. Governors with weights operating by inertia.
12. Governors for marine engines. (Cf. 65f, 27.)
13. Differential governors and dynamometric governors.
14. Governors comprising pump mechanism.
15. Transmission and driving mechanism employing auxiliary motors.

## 60—Continued.

16. Governors for hydraulic motors.
17. Indirect governors comprising pawl and ratchet mechanism.
18. Indirect governors with reversing gears, including, for example, clutch-shifting mechanism.
19. Special forms of indirect governors.
20. Electric governors and transmission devices. (Cf. 21d, 15.)
21. Shaft governors.
22. Miscellaneous special constructions of governors.

**CLASS 61.—LIFE SAVING.** (Rescue from drowning, class 65a.)

- 61a. Apparatus, Appliances and Processes for Rescuing From Fire and Suffocation, Also for Resuscitation; Fire Extinguishers.** (Pumps for fire engines, class 59.)

**FIRE ESCAPES AND LIFE-SAVING ARRANGEMENTS FOR BUILDINGS.** (Gr. 1-10.)

1. Life-saving ladders with rigid uprights, especially extension ladders. (Cf. 34l, 22 [23<sup>2</sup>]); also hooks for fastening such ladders.
2. Telescopic life-saving scaffolds. (Cf. 37e.)
3. Extensible life-saving ladders and scaffolds of the lazy-tongs type. (Cf. 35d, 6; 37e, 6.)
4. Folding, sliding, and pivoted life-saving ladders fastened to the building which serve also for other purposes (window gratings, etc.). (Cf. 34l, 22.)
5. Life-saving ladders which may be rolled up, including those fastened to the building.
6. Fire-escape elevators, chutes, and other similar devices on buildings. (Cf. 37f.)
7. Brake-controlled winding mechanism for fire-escape apparatus. (Cf. 35c.)
8. Sliding brakes for fire-escape apparatus. (Cf. 35c.); also life-saving belts for fire escapes.
9. Flexible tubes or chutes for life-saving.
10. Spring nets [body catchers], fire shields.

**FIRE EXTINGUISHERS.** (Gr. 11-18.)

11. Fire-extinguishing tanks, pails and other appliances for storing water, including those with hand pumps.
  12. Gas sprayers. (Cf. gr. 15; 59c, 4.) [Chemical extinguishers.]
  13. Devices for mixing fire-extinguishing salts and the like with water. (Cf. 61b.)
  14. Devices for extinguishing fire by the use of dry gases. (Cf. 61b.)
  15. Fire engines (cf. gr. 12), exclusive of pump structure. (Piston pumps, 59a, 13; the driving of the pump by the motor of the motor vehicle, 63c, 3; general vehicle structure, 63b.) Hose reels and the like for fire-extinguishing purposes.
  16. Nozzles for fire-extinguishing purposes. (Cf. 85g, 2.)
  17. Automatic fire extinguishers and fire alarms, not including those with compressed air in a pipe system. (Cf. gr. 18; 74a, 30-38; 74c, 14-23.)
  18. Automatic fire extinguishers and fire alarms with compressed air in a pipe system. (Cf. gr. 17; 74a; 74c.)
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19. Smoke helmets, breathing masks, and the like. (Cf. 30d, 27; 30k, 13-14.)
  20. Apparatus for resuscitation.
  21. Extinguishing devices for receptacles filled with combustible fluids.

- 61b. Fire-Extinguishing Preparations and Chemical Processes for Extinguishing Fire.** (Without separate groups.)

**CLASS 62.—(NO PATENTS.)****CLASS 63.—SADDLERY\* AND VEHICLE STRUCTURE, INCLUDING MOTOR VEHICLES AND CYCLES.** (Railway Vehicles, 20c.)

- 63a. Tools and Machines for Use in Saddlery, Picking Machines for Cushion Filling, Machines for Making Strap Keepers, etc.**

(Making of leather articles relating to saddlery; collars, 56a, 7; belts, 28b, 20-23.)

1. Tools and apparatus for making leather articles for saddlery (cf. gr. 2), also for connecting driving belts. (Belt fasteners, 47d, 9.)
2. Machines for making leather articles for saddlery, including strap keeper machines. (Cf. gr. 1.)
3. Making cushion-filling material, e. g., by means of picking machines.
4. Making cushions and the like, especially mattresses and machines for making the same.

- 63b. General Wheeled Vehicle and Sled Structure, Including Ice Yachts, Baby Carriages, and Trucks; Also Tools and Apparatus.** (Agricultural vehicles, 45e, 31; advertising vehicles, 54g, 8.)

**VEHICLE BODY STRUCTURE AND APPURTENANCES.** (Gr. 1-9.)

1. Bodies in general (cf. 20c, 1-2; motor vehicle bodies, 63c, 22), standards, bolsters, and standard supports (cf. 20c, 12), devices for increasing the capacity of vehicles.
2. Seats and seat arrangements in general. (Seats for motor vehicles, 63c, 22; for railway cars, 20c, 41; 34g, 7; portable seats, 33d, 6.)
3. Tops, boots, and covers. (Cf. gr. 49; 20c, 29, 30; 56b, 7; 63c, 24.)
4. Lighting arrangements and lamp holders (cf. 4a, 26) ash receptacles and similar appurtenances, for road vehicles.
5. Heating and ventilating arrangements for road vehicles. (For railway cars, 20c, 21-23; 20l, 3.)
6. Doors. (Cf. 20c, 33.)
7. Windows. (Cf. 20c, 39.)
8. Steps. (Cf. 20c, 37.)
9. Mud guards and devices for protection against dust for vehicles in general. (Cf. gr. 52; 63c, 26; 63g, 10.)

**RUNNING GEARS.** (Gr. 10-16.)

10. Running gears in general. (Cf. 63c, 21.)
11. Running gears with dirigible front wheels and with dirigible front and rear axles. (Cf. 63c, 20.)
12. Fifth wheel structure and king bolts.
13. Spring arrangements for running gears and devices on vehicle springs for absorbing shocks. (Cf. gr. 15; 63c, 22.)
14. Structure of vehicle springs. (Cf. 20d, 21; 47a, 17.)
15. Fluid cushions for use as vehicle springs. (Cf. 20d, 21; 63c, 22.)
16. Sliding ring vehicles, vehicles with a traveling track, etc. (Cf. 63c, 17.)

**POLES AND APPURTENANCES.** (Gr. 17-22.)

17. Poles and shafts, pole supports and neck yoke devices on the pole, and pole hooks for fastening the pole straps.



## 63b—Continued.

18. Means for fastening poles to vehicles.
19. Arrangements for preventing breaking of the pole. e. g., yieldable poles.
20. Devices for releasing the pole in case the horse should fall.
21. Whiffletrees and equalizers. (Cf. 45d, 2.)
22. Means for fastening traces to whiffletrees, whiffletree hooks. (Cf. 45h, 3; 47d, 15, 16; 56a, 23.)

## DEVICES FOR PROTECTING HORSES. (Gr. 23-28.)

23. Horse releasers for vehicles in general. (Cf. 45d, 2; 56a, 18.)
24. Releasing devices in combination with brakes.
25. Devices on vehicles for preventing the horse from falling.
26. Devices on vehicles for stopping runaway horses. (Cf. 56a, 17, 18.)
27. Devices on vehicle parts for lightening the horse's work. (Cf. gr. 21; 56a, 24.)
28. Starters for vehicles. (Cf. gr. 65; 20h, 2.)

## CONVERTIBLE VEHICLES, ETC. (Gr. 29-31.)

29. Vehicles with special arrangements for running upon rails, and vehicles with variable tread. (Cf. 20d, 30.)
30. Convertible and extensible vehicles. (Cf. 20c, 8.)
31. Collapsible vehicles. (Cf. gr. 47.)

## VEHICLES FOR VARIOUS PURPOSES. (Gr. 32-37.)

32. Dump wagons (road vehicles). (Cf. 20c, 15.)
33. Devices for loading and unloading wagons. (Cf. 35d, 1; 45e, 30; 81e, 28), road vehicles with pivoted or sliding dumping doors (Cf. 20c, 13; 81d, 1), and end gates for wagons.
34. Merchandise wagons, including those for street vending, mail wagons, omnibuses, hearses, livestock wagons. (Advertising vehicles, 54g, 8.)
35. Vehicles for transporting fluid and solid materials, (oil wagons, milk wagons, and wagons for other foodstuffs). (Cf. 20c, 9, 10; 53a.)
36. Two-wheeled vehicles (racing sulkies), and one-wheeled road vehicles. [Not cycles.]
37. Devices on two-wheeled vehicles for relieving the load on the horse on going up or down hill, also devices for maintaining horizontal position of the vehicle body on uneven roads.

## HAND TRUCKS. (Gr. 38-39.)

38. Trucks for carrying various articles. (Cf. 81e, 29.)
39. Wheelbarrows and the like.

## ACCESSORIES FOR USE IN CONNECTION WITH ROAD VEHICLES. (Gr. 40-44.)

40. Wagon couplings (cf. 63c, 12) and steering devices for wagon trains. (Cf. 63c, 3.)
41. Signal devices and indicating devices for vehicles. (Cf. 63c, 25; 74b, 6; 74d.)
42. Rein and whip holders (cf. 56a, 13, 27), rein supports and whipping devices on vehicles. (Cf. 45d, 2; 45h, 1.)
43. Axle supports. (Cf. 35d, 2.)
44. Devices for supporting wheels, e. g., chocks, apparatus for cleaning vehicles. (Cf. 20h, 8.)

## PERAMBULATORS. (Gr. 45-53.)

45. Perambulators adjustable in various ways (to different lengths and for sitting or reclining.)
46. Perambulators which are adapted for use as cradles or sleds. (Cf. gr. 67.)
47. Collapsible perambulators.

## 63b—Continued.

48. Underframes, spring arrangements, steering devices for perambulators.
49. Bodies, tops, handles, and handle bars for perambulators.
50. Devices on perambulators for facilitating the ascent or descent of stairs.
51. Devices for automatically moving perambulators back and forth. (Cf. 34h, 2 [3?].)
52. Safety devices on perambulators to prevent the child from falling out. (Cf. 34h, 2.) Safety devices on wheels, mud guards and the like. (Cf. gr. 9; 63c, 26; 63g, 10.)
53. Seats for the nurse, toys, amusement devices, and music players on perambulators.

## ROAD VEHICLE BRAKES. (Gr. 54-65.) (Cf. 63c, 23.)

54. Brake levers. (Cf. 20f, 4.)
55. Drag shoes and brake shoes, brake beams and bars. (Cf. 20f, 1, 2.)
56. Brakes and holding devices for hand trucks and perambulators.
57. Locking devices, comprising obstacles placed between the spokes, theft-preventing devices for vehicles in general.
58. Drag brakes.
59. Stilt brakes and devices for preventing skidding. (Cf. 63c, 24; 63d, 26; 63e, 12.)
60. Brakes which operate in the manner of a friction clutch.
61. Automatic brakes which operate when going down hill, upon the holding back of the horse, or upon the cessation of the pull on the traces.
62. Shoe brakes.
63. Band brakes.
64. Fluid pressure brakes.
65. Vehicle brakes with means for storing up energy. (Cf. 20h 3; 63k, 8.)

## SLEDS AND APPURTENANCES (Driving mechanism, 63c, 17; 63k, 22, 23). (Gr. 66-69.)

66. Sleds and ice yachts, also collapsible sleds.
67. Devices for converting wheeled vehicles into sleds.
68. Devices for converting sleds into wheeled vehicles.
69. Brakes and steering devices, and means to prevent the skidding of sleds.

## 63c. Motor Vehicle Structure, Including Motor Tricycles, e. g., Driving Mechanism, Gearing, Motor Suspension, Steering Apparatus, etc. (Motor structure, classes 14, 21d, and 46.)

## MOTOR VEHICLES OF SPECIAL TYPES. (Gr. 1-5.) (Cf. 20b, 1.)

1. Electric motor vehicles.
2. Steam motor vehicles.
3. Traction vehicles, motor-driven wagon trains (cf. 63b, 40), and the operation of machines including fire engines, hoisting and winding apparatus by the motor of the motor vehicle.
4. Motor tricycles and two-wheeled motor carriages. [Motorcycles, 63k, 24.]
5. Motor vehicles with a motor in the wheel, and the mounting of the motor in the axle of motor vehicles.

## DRIVING MECHANISM, GEARING AND CONTROL DEVICES FOR MOTOR VEHICLES. (Gr. 6-18.)

6. Spur-wheel gearing (including reversing gearing) and worm gearing.
7. Friction gearing.
8. Planetary gearing.

## 63c—Continued.

9. Intermittent grip gearing.
10. Belt and chain gearing, including chain casings and chain tightening devices. (Cf. 47d; 63k, 5, 28.)
11. Compensating gearing, compensating couplings.
12. Clutches, yieldable parts inserted in the driving mechanism, universal joint transmission and flexible shafts, universal joint shafts, etc. (Cf. 47c.)
13. Shifting levers (adjustment of different parts by means of a single lever), devices for changing the gears, together with lock devices for the shifting element, starting mechanism operated from the vehicle (cf. 46c, 24-28), and hand or foot operated mechanism auxiliary to the motor.
14. Means for shifting the driving mechanism from different positions, disconnecting and braking one wheel in connection with steering, disconnecting the driving mechanism by means of movable seats and steps.
15. Driving mechanism for the steering wheels and motor vehicles with four or more driving wheels.
16. Driving obliquely set wheels, connection of the driving wheels with the driving shaft, and the driving of but one of the two wheels of an axle.
17. Driving wheels for motor vehicles (for motor sleds, 63k, 22-23), motor vehicles with sliding rings (cf. 63b, 16), endless tracks, etc., driving by means of pushers, screws, etc., and by means of separate driving wheels adapted to be pressed down upon the road surface (cf. 45a, 21-22), driving by means of air propellers and by reaction produced by steam, gas or air jets, and the like.
18. Power transmission by means of air or other fluids.

19. Motor suspension for motor vehicles, mounting of the gearing upon the frame, and the connection of the driving axle with the spring frame.
20. Steering apparatus (cf. 63b, 11), and steering wheels (including those with heating devices), and devices for throwing the vehicle frame or body into an oblique position.
21. Running gears and axles for motor vehicles. (Cf. 63b, 10.)
22. Motor vehicle bodies (cf. 63b, 1), tops, seats (cf. 63b, 2; 20c, 41), springs and shocks absorbers. (Cf. 63b, 13, 15.)

## MOTOR VEHICLE ELEMENTS. (Gr. 23-25.)

23. Brake apparatus for motor vehicles. (Cf. 20f; 63b, 54-65.)
24. Dust shields and wind shields for motor vehicles and devices for preventing the slipping of the wheels and skidding of the vehicle. (Cf. 20c, 29; 63b, 59; 63d, 26; 63e, 12.)
25. Signals and lights for motor vehicles and devices for indicating and limiting the speed, provided they are modified by the structure of the motor vehicle or necessitate the modification of said structure. (Cf. 42c; 46c, 14; 74b, 6; 74d.)
26. Miscellaneous features in motor vehicle structure, exclusive of gr. 1-25, e.g., heating and cooling devices, lubricating apparatus, mud guards (cf. 63b, 9 and 52; 63g, 10), tanks, safety devices operating upon bursting of tires and in case of collisions, protective head coverings for use in motor vehicles.

## 63d. Wheels, Bearings, and Axles for Carriages and Wagons and Cycles.

## WHEELS, BEARINGS, AND AXLES FOR CARRIAGES AND WAGONS. (Gr. 1-15.)

1. Wheels in general.
2. Disk wheels.
3. Separable, removable, and auxiliary rims.
4. Spokes.
5. Hubs and axle boxes. (Cf. gr. 12.)
6. Apparatus for making wheels and for putting on metal tires. (Cf. 7c, 32 and 33; 38f, 7; 49f, 6; 49g, 6.)
7. Axle caps and fastenings, and removable wheels. (Cf. gr. 5, 8, 12, 13.)
8. Axle pins. (Cf. gr. 5, 7.)
9. Wheels with spring spokes. (Cf. gr. 20.)
10. Wheels with spring hubs. (Cf. gr. 21.)
11. Spring wheels, exclusive of groups 9, 10.
12. Axles. (Cf. gr. 5.)
13. Lubricating apparatus for wheels. (Cf. gr. 5, 7, 12; 47e.)
14. Ball bearings for road-vehicle wheels. (Cf. gr. 23; 47b, 12; ball bearings for railway-car wheels, 20d, 15.)
15. Roller bearings for road-vehicle wheels. (Cf. gr. 24; 20d, 15; 47b, 12.)

## WHEELS, BEARINGS, AND AXLES FOR CYCLES. (Gr. 16-25.)

16. Cycle wheels in general.
17. Rims.
18. Spokes.
19. Hubs.
20. Cycle wheels with spring spokes. (Cf. gr. 9.)
21. Cycle wheels with spring hubs. (Cf. gr. 10.)
22. Spring cycle wheels, exclusive of groups 20, 21.
23. Ball bearings for cycle wheels. (Cf. gr. 14.)
24. Roller bearings for cycle wheels. (Cf. gr. 15.)
25. Crank-shaft bearings for cycles.
26. Devices to prevent skidding for wheels of road vehicles. (Cf. 63b, 59; 63c, 24; 63e, 12.)

## 63e. Tires, Inflating Pumps, and Valves for Carriages, etc., and Cycles.

## TIRES, ESPECIALLY FOR CARRIAGE WHEELS, ETC. (motor-vehicle wheels). (Gr. 1-4.) (Cf. gr. 5-16.)

1. Pneumatic tires. (Cf. gr. 5, protection against puncturing, gr. 11, protection against slipping, gr. 12.)
2. Elastic tires (solid rubber, cushioned, and padded tires). (Cf. gr. 4, 15.)
3. Tires of metal, wood, leather, and other materials.
4. Spring tires. (Cf. gr. 2, 16; 63d, 11.)

## TIRES, ESPECIALLY FOR CYCLES. (Gr. 5-16.) (Cf. gr. 1-4.)

5. Pneumatic tires for cycles. (Cf. gr. 1.)
6. Inner tubes (including manufacture) for cycle and motor-vehicle tires. (For manufacture, cf. 39a, 10, 11.)
7. Casings for pneumatic tires of cycles.
8. Leather casings for pneumatic tires of cycles and motor vehicles.
9. Fabric inserts for pneumatic tire casings. (Cf. 86c, 4.)
10. Manufacture of rubber casings for pneumatic tires. (Cf. 39a, 10, 11.)



## 63e—Continued.

11. Protection of pneumatic tires of cycles against puncturing.
12. Prevention of sliding in connection with pneumatic tires (non-slip covers for motor vehicle tires). (Cf. 63b, 59; 63c, 24; 63d, 26.)
13. Automatic puncture-closing pneumatic tires, devices for locating punctures, devices for vulcanizing repaired spots and auxiliary means for making pneumatic tires air tight. (Chemical features, cement and the like, 22i.)
14. Cellular tires with separately or simultaneously inflatable cells. (Tires with hollow or solid balls, or the like, gr. 15.)
15. Solid rubber cushioned and padded tires for cycles. (Cf. gr. 2; 39a, 10, 11.)
16. Spring tires for cycles. (Cf. gr. 4.)

17. Devices for putting on and for removing casings, and elastic tires, and devices for fastening the locking wires of solid rubber tires. (Devices for putting on metal tires, 63d, 6.)

## AIR PUMPS AND VALVES FOR PNEUMATIC TIRES. (Gr. 18-20.) (Cf. 27b, 10-16.)

18. Air pumps and other apparatus for inflating tires.
19. Automatic air pumps and other apparatus for inflating tires.
20. Valves for pneumatic tires. (Cf. 30e, 11; 47g.)

## 63f. Cycle Supports, Stands, Hangers, Locks, and Fasteners; also Teaching Appliances.

## CYCLE SUPPORTS AND STANDS AND RELATED MATTER. (Gr. 1-6.)

1. Props located on the cycle frame in general.
2. Pedal supports, lockable supports, cycle supports adapted for use as baggage carriers. (Cf. 63g, 4.)
3. Cycle supports with auxiliary wheels.
4. Cycle stands.
5. Cycle hangers.
6. Cycle holders, including those capable of being locked. (Cf. 68a, 109.)

## CYCLE LOCKS AND FASTENINGS. (Gr. 7-9.) (Cf. gr. 2, 6; 68a, b.)

7. Cycle locks for the steering apparatus.
8. Cycle locks for the crank, the wheel, or the saddle.
9. Brake locks for cycles.

10. Devices for giving instructions in the use of cycles. (Tracks, and the like, 77c, 18.)

## 63g. Cycle Saddles and Other Appurtenances, Including Alarms and Signals, Provided the Structure is Modified by its Application to the Cycle (otherwise see class 74a), Baggage Carriers, Chain Casings as Separate Parts, Mud Guards.

## SADDLES AND RELATED FEATURES. (Gr. 1-4.)

1. Cycle saddles in general.
2. Saddles with adjustable seats and with two movable parts.
3. Saddle springs and fastenings (saddle clamps). (Saddle posts, 63h, 19.)
4. Back rests for cycle saddles, auxiliary or children's seats and shoulder supports and the like for cycles. (Cf. 63f, 2.)

## 63g—Continued.

## CYCLE SIGNALS AND LIGHTS. (Gr. 5-7.)

5. Alarms for cycles.
  6. Signal devices (actuated by one of the wheels, etc., in combination with the brakes, or electrically operated) and bell supports for cycles.
  7. Lights (including electric) and lamp supports for cycles.
- 
8. Baggage carriers, gun and saber supports for cycles. (Cf. 63i, 2.)
  9. Chain casings (as separate parts), and means for cleaning cycle chains. (Cf. 63h, 1.)
  10. Cycle mud guards. (Cf. 63b, 9, 52; 63c, 26.)
  11. Umbrellas and wind shields for cycles.
  12. Dress shields for cycles.
  13. Devices for indicating speed (cf. 74b, 6) and map holders for cycles. (Place indicators and cyclometers, 42p, 11.)
  14. Steps and foot rests for cycles. (Cf. 63k, 33.)
  15. Miscellaneous appurtenances for cycles, exclusive of gr. 1-14, e. g., oil cans, nail catchers.

## 63h. Cycle Frames, Tube Connections, Handle Bars and Steering Apparatus, Chain Casings as a Part of the Frame.

## CYCLE FRAMES AND TUBE CONNECTIONS. (Gr. 1-5.)

1. Rigid frames for cycles (including chain casings forming part of the frame). (Chain casings as separate parts, 63g, 9.)
2. Spring frames for cycles.
3. Collapsible frames for cycles.
4. Frames for motor cycles.
5. Connections for tubing for cycle frames.

## CYCLES DISTINGUISHED BY THE CHARACTER OF THE FRAME. (Gr. 6-12.)

6. Unicycles.
7. Bicycles.
8. Dicycles.
9. Tandems.
10. Polycycles.
11. Cycles convertible into railway velocipedes. (Cf. 20c, 20.)
12. Convertible cycles exclusive of those mentioned in gr. 11.

## HANDLEBARS AND STEERING APPARATUS FOR CYCLES. (Gr. 13-18.)

13. Steering apparatus for cycles in general. (Cf. gr. 14-17.)
14. Handlebars. (Cf. gr. 13, 15-17.)
15. Spring handlebars.
16. Removable handlebars, including those designed for protection against theft.
17. Handlebars of adjustable height.
18. Grips for handlebars.

19. Saddle posts for cycles.

## 63i. Cycle Brakes.

1. Drag-shoe brakes.
2. Brakes actuated by the turning of the grips or of the handlebars.
3. Brakes actuated by handles or treadles exclusive of groups 1 and 2.

## 63i—Continued.

4. Brakes actuated by compressed air, or by hydraulic means.
5. Brakes actuated by movement of the saddle.
6. Automatically actuated brakes.
7. Brake levers and fastening devices for brake levers. (Cf. gr. 1-4.)
8. Back-pedaling brakes without coaster attachments.
9. Back-pedaling coaster brakes which are actuated by a screw thread on the hub of the chain wheel.
10. Back-pedaling coaster brakes which are actuated directly by the chain.
11. Miscellaneous back-pedaling coaster brakes exclusive of gr. 9-10.
12. Back-pedaling coaster brakes combined with change-speed gearing.
13. Brakes actuated by simultaneous depression of both pedals, or by turning the same in opposite directions.

**63k. Driving Mechanism for Rider-Propelled Wheeled Vehicles and for Rider-Propelled or Motor-Driven Sleds.****SINGLE-SPEED DRIVING MECHANISM FOR RIDER-PROPELLED VEHICLES. (Gr. 1-12.) (Single-speed driving mechanism for motor cycles, gr. 24.)**

1. Foot-operated driving mechanism with planetary gearing.
2. Foot-operated driving mechanism with spurgearing, without chains or connecting rods, exclusive of group 1.
3. Foot-operated driving mechanism with cone wheels.
4. Foot-operated driving mechanism with treadle levers combined with cranks and connecting rods.
5. Foot-operated driving mechanism, with treadle levers combined with reciprocating chains or straps and one-way ratchet mechanism.
6. Foot-operated driving mechanism, with treadle levers combined with one-way ratchet mechanism, exclusive of gr. 5.
7. Foot-operated driving mechanism, with special forms of transmission, as friction wheels, cam disks, chain gearing, combined chain and spur gearing, cranks and connecting rods, fluid pressure, etc.
8. Foot-operated driving mechanism with auxiliary driving devices, e. g., springs, flywheels, sails, wind wheels, parts adapted to be moved by the thigh of the rider, devices for storing and reapplying the energy of movement lost in the brakes, etc. (Cf. 63b, 65.)
9. Hand-operated driving mechanism.
10. Combined hand and foot power driving mechanism.
11. Driving mechanism operated by the movement of the seat.
12. Driving mechanism comprising push bars operated by the rider. (Cf. gr. 22.)

**VARIABLE-SPEED GEARING FOR RIDER-PROPELLED VEHICLES. (Gr. 13-21.) (Variable-speed gearing for motor cycles, gr. 25, for motor vehicles, 63c, 6-10.)**

13. Variable-speed sprocket gearing in general, exclusive of gr. 14. (Cf. 47h, 17.)
14. Variable-speed sprocket gearing comprising a plurality of pairs of sprocket wheels and a single chain. (Cf. 47h, 17.)
15. Variable-speed gearing comprising eccentrically mounted intermediate wheels.
16. Variable-speed planetary gearing.

## 63k—Continued.

17. Spur-wheel variable-speed gearing exclusive of gr. 15-16.
18. Cone wheel variable-speed gearing.
19. Treadle lever variable speed gearing.
20. Variable-speed gearing comprising driving wheels of variable diameters.
21. Variable-speed gearing exclusive of gr. 13-20.

**DRIVING MECHANISM FOR SLEDS PROPELLED BY THE RIDER, OR BY MOTORS. (Gr. 22-23.) (Cf. 63c, 17.)**

22. Propulsion of sleds by means of steppers, or endless chains provided with driving members, and by the use of air motors. (Cf. gr. 12.)
23. Propulsion of sleds by means of driving wheels or screws contacting with the road surface.

**DRIVING MECHANISM FOR MOTOR CYCLES, ONE OR TWO WHEELED, INCLUDING THE MOUNTING OF THE MOTOR. (Gr. 24-27.)**

24. Single-speed driving mechanism for motor cycles comprising belt, sprocket, spur-wheel or friction gearing; also cycles with the motor located in the interior of the driving wheel.
25. Variable speed gearing for motor cycles.
26. Shifting mechanism for controlling the operation of the motor. (Cf. gr. 24-25.)
27. Auxiliary foot-power driving mechanism for motor bicycles in which the pedals serve as foot rests.

**DETAILS OF CYCLE-DRIVING MECHANISM. (Gr. 28-34.)**

28. Chain tighteners. (For motor vehicles, 63c, 10.)
29. Sprockets and sprocket chains.
30. Cranks of nonvariable length.
31. Cranks of adjustable length.
32. Cranks in which the length varies automatically.
33. Pedals. (Cf. 63g, 14.)
34. Automatically operating one-way clutches (Cf. 63c, 63i.)
35. Clutches operable by the rider. (Cf. 47c, 63c, 12.)
36. Spring connections inserted in the driving members. (Cf. gr. 1-27, 29-32.)

**CLASS 64.—LIQUOR HANDLING EQUIPMENT AND THE LIKE.**

- 64a. Receptacles, Including Jars, Bottles, etc., and Closures Therefor, also Opening Devices Combined with Closures, Drink Registers and Beer Glass Stands.** (Closures for receptacles containing acids and condensed gases, 12f; filling closures for soda-water receptacles, 85a, 4.)

**DISPENSING AND DRINKING VESSELS AND APPURTENANCES. (Gr. 1-7.)**

1. Bottles and mugs, also bottle covers not including those used for packing.
2. Communion cups.
3. Drinking vessels with removable feet or handles. (Cf. gr. 49; 33d, 4.)
4. Liquor receptacles with a plurality of separate compartments.
5. Drip catchers. (Cf. 64c, 42.)
6. Lip and mustache shields for drinking vessels.
7. Cans and jars. (Fixed receptacles for vending purposes, 341, 34.)

**STOPPERS. (Gr. 8-18.) (Measuring Stoppers, 64c, 43.)**

8. Wood stoppers.
9. Rubber stoppers.



## 64a—Continued.

10. Stoppers of artificial materials and special treated ordinary stoppers (also machines for making stoppers).
11. Stoppers which are prevented from contacting with the fluid.
12. Stoppers with grip devices.
13. Transverse stoppers.
14. Stoppers with devices for preventing loss.
15. Stoppers with devices which are not related to their use as closures.
16. Screw stoppers.
17. Expanding stoppers.
18. Stoppers of various kinds, exclusive of gr. 8-17.

CLOSURES FOR RECEPTACLES, ESPECIALLY BOTTLES (liquor-containing). (Gr. 19-55.) (Cf. gr. 8-18 and 65-72; closures for preserving cans, gr. 56-64; bottle closures for druggists' use, 30g, 3; closures for kitchen utensils, 34l, 13.)

19. Disk closures.
20. External cap closures. (Cf. gr. 22.)
21. Internal cap closures. (Cf. gr. 22.)
22. External and internal caps. (Cf. gr. 20, 21.)
23. Cap closures with opening devices. (Caps to be torn off, group 73, can openers, gr. 64.)
24. Screw cap closures.
25. Internal closures.
26. Lever action wire-bow closures.
27. Jointed locking-band closures with hooks.
28. Jointed locking-band closures with lever hooks.
29. Jointed locking band and bow closures with special devices not related to their use as closures.
30. Pressure-applying devices for closures which have parts adapted to slide into grooves or tracks until they come to locking position.
31. Cam closures.
32. Bow closures designed to be clasped on the bottle.
33. Bow closures with separate spring devices.
34. Bow closures which are tightened by rack devices.
35. Bow closures with screw pressure devices.
36. Bayonet closures.
37. Lids with inclined or cam surfaces.
38. Ball closures (not internal).
39. Closures which are tightened up by wedges.
40. Closures which are tightened up by chains.
41. Metal band closures.
42. Clasp closures.
43. Vacuum closures.
44. Closures for fastening on membranes or the like.
45. Closures with fluid seals.
46. Double closures. [Double seat.]
47. Closures in the bottoms of receptacles.
48. Closures for cans, as milk cans, canisters, etc.
49. Closures adapted for use as drinking vessels. (Cf. gr. 3.)
50. Barrel door closures.
51. Beer mug lids.
52. Dropping corks and spray corks for liquor handling and the like.
53. Cock closures.
54. Closures with emptying and filling devices for liquor handling, also closures which permit a gradual reduction of interior pressure, tipping devices for bottles and other receptacles. (Cf. 64c, 15.)
55. Closures with rotary slide valves.

PRESERVING CANS AND CLOSURES THEREFOR. (Gr. 56-64.) (Cf. 53b.)

56. Preserving cans designed to be closed by flanging over.
57. Preserving cans designed to be closed by use of adhesives.

## 64b—Continued.

58. Preserving cans designed to be closed by soldering.
59. Preserving cans with lids clasped on.
60. Preserving cans with miscellaneous closures, exclusive of gr. 56-59.
61. Preserving cans with an inserted rip wire or rip strip.
62. Preserving cans in which the rip strip is formed by channeling or in which it is soldered on.
63. Preserving cans in which the lid or the wall may be entirely or partially rolled up.
64. Preserving cans including devices to facilitate cutting open. (Cf. gr. 23.)

NONREFILLABLE BOTTLE CLOSURES. (Gr. 65-72.)

65. Nonrefillable bottle closures without valves.
66. Closures which do not permit opening of the bottle without destroying same.
67. Nonrefillable bottle closures with free acting valves.
68. Same, with weight-loaded valves.
69. Same, with spring-loaded valves.
70. Same, with two or more valves.
71. Same, with valves of various kinds.
72. Miscellaneous devices to prevent the refilling of bottles.

SEALS OR FASTENERS FOR RECEPTACLE CLOSURES. (Gr. 73-81.)

73. Cap fasteners. (Cf. gr. 23.)
74. Metal-band fasteners.
75. Closure fastenings comprising spring wire or sheet metal bows.
76. Wire fasteners which must be destroyed in order to open the receptacle.
77. Fasteners comprising seals and labels provided their form is modified by the nature of the bottle closure. (Labeling machines for bottles and cans, 81b, 1.)
78. Closure fasteners comprising points passing through the bottle neck and the stopper.
79. Closure fastenings comprising parts arranged to snap into interior notches in the neck of the bottle.
80. Closure fastenings comprising locks.
81. Miscellaneous closure fastenings, exclusive of gr. 73-80.

DRINK REGISTERS. (Gr. 82-85.)

82. Drink registers which are mounted upon beer glass stands.
83. Drink registers which are fastened on receptacles, also indicating characters for glasses.
84. Drink registers which are fastened to the lid of the receptacle.
85. Independent drink registers.

86. Beer glass stands without advertising features. (With advertising features, 54g.)

64b. Cleaning of Bottles, Glasses, Tubes, etc., also Emptying and Filling, Including Siphons and Funnels, Closing, Wiring, Capping, Uncorking, and Independent Apparatus and Tools for Opening Bottles, etc., e. g., Cork Pullers, Can Openers, and the Like.

CLEANING OF BOTTLES, GLASSES, TUBES, ETC. (Gr. 1-8.)

1. Bottle cleaning by means of brushes.
2. Bottle cleaning without brushes or solid cleaning materials.

## 64b—Continued.

3. Bottle cleaning with means other than brushes (chains, shot, sand, and the like).
4. Cleaning of bottle cases.
5. Cleaning drinking vessels by means of brushes.
6. Cleaning drinking vessels without the use of brushes.
7. Cleaning of tubes for conveying beer.
8. Brushes, per se, so far as applied to liquor-handling industry. (Cf. class 9.)

**EMPTYING AND FILLING FOR LIQUOR-HANDLING PURPOSES, INCLUDING SIPHONS AND FUNNELS.** (Gr. 9-19.) (Cf. 85a, 4.)

9. Apparatus for filling bottles without counterpressure.
10. Apparatus for filling bottles at a constant counterpressure.
11. Apparatus for filling bottles by siphon action.
12. Pressure-applying devices for the filling nozzle in cask filling apparatus.
13. Apparatus for filling casks under counterpressure.
14. Filling casks without counterpressure.
15. Siphons as liquor-handling devices.
16. Funnels with automatic cut-off, including those with measuring devices.
17. Funnels with nonautomatic cut-off, including those with measuring devices.
18. Funnels without cut-off.
19. Devices for simultaneously filling and closing bottles and casks.

**CLOSING, WIRING, AND CAPPING OF BOTTLES.** (Gr. 20-24.)

20. Apparatus for corking bottles, also cork steamers and cork cleaning.
21. Apparatus for applying bow closures to bottles.
22. Apparatus for applying other closures to bottles, exclusive of gr. 20, 21.
23. Capping machines.
24. Wiring machines.

**REMOVING CLOSURES FROM BOTTLES AND OTHER RECEPTACLES, INCLUDING CORK PULLERS, CAN OPENERS, AND THE LIKE.** (Gr. 25-29.)

25. Screw cork pullers.
26. Cork pullers without screws.
27. Devices for removing corks which have fallen into the bottle.
28. Can openers.
29. Apparatus for removing bungs from casks.

**64c. Beer Pumps, Dispensing Apparatus for Retailing Liquids (measuring and registering apparatus, class 42e), Siphon Bottles, Bungs, Valves, and the Like.**

**BEER PUMPS AND OTHER DISPENSING APPARATUS AND APPURTENANCES, INCLUDING SIPHON BOTTLES.** (Gr. 1-20.)

1. Beer pumps in general.
2. Dispensing by means of gas under pressure.
3. Compressing air for dispensing apparatus.
4. Dispensing by means of weighted pistons.
5. Dispensing by means of elastic sacks.
6. Recovery of carbonic acid lost in dispensing.
7. Carbonic-acid receptacles and valves for dispensing apparatus. (Cf. 12f, 2; 85a, 5.)

## 64c—Continued.

8. Devices for forcing beer out of the tapping conduit into the cask.
9. Beer traps.
10. Apparatus for tapping and pouring out, also measuring apparatus for dispensing purposes (exclusive of cocks, gr. 30).
11. Price indicators, registering apparatus, and meter mechanism for dispensing purposes.
12. Devices for indicating the amount of liquid contained in a receptacle.
13. Pressure regulators, also pressure-relieving devices for dispensing apparatus.
14. Apparatus for heating or cooling for dispensing purposes.
15. Apparatus for dispensing directly from bottles. (Cf. 64a, 54.)
16. Siphons.
17. Apparatus for dispensing liquids heavily charged with carbonic acid.
18. Apparatus for supplying carbonic acid in dispensing.
19. Apparatus for producing carbonic acid for dispensing purposes.
20. Caps for protection against spraying in tapping casks.

**BUNGS AND THE LIKE.** (Gr. 21-26.)

21. Bungs, exclusive of gr. 22-25.
22. Carbonic-acid bungs for dispensing purposes.
23. Air bungs for casks. (Cf. 6f, 4.)
24. Expanding bungs.
25. Wood bungs.
26. Bushings and closures for bung and tap holes. (Cf. gr. 27, 33.)

**COCKS, VALVES, AND SLIDE VALVES FOR LIQUID DISPENSING APPARATUS.** (Gr. 27-39.)

27. Cocks with inserted tubes.
28. Frothing taps.
29. Mixing cocks. (Cf. 85f, 1.)
30. Measuring cocks in which the measuring space cannot be varied, including those combined with registering mechanism. (Cf. 42e, 17, 19.)
31. Cocks, etc., for inspecting beer conduits for cleaning purposes.
32. Self-closing cocks. (Cf. 47g, 22-24.)
33. Tapping cocks, including those for bungs with automatically closing valves.
34. Pinch cocks.
35. Cocks and slide valves for viscous fluids.
36. Cocks comprising means for supplying air.
37. Filtering cocks. (Cf. 12d, 22.)
38. Cocks with hollow plugs.
39. Cocks with linings.

40. Locks, etc., for dispensing cocks. (Cf. 47g, 46.)
41. Means for fastening dispensing cocks in earthen ware and glass vessels.
42. Drip catchers for dispensing apparatus. (Cf. 64a, 5.)
43. Stoppers and bottles with measuring apparatus for dispensing purposes. (Cf. 30g, 2.)
44. Dispensing combustible liquids. (Cf. 4a, 2; 341, 20; 81e, 38.)
45. Tools for screwing in bung-hole and tap-hole bushings.
46. Apparatus for tilting casks. (Cf. 81e, 35.)



# CLASS 65.—SHIPBUILDING AND NAVIGATION. | 65a—Continued.

65a. Shipbuilding, Equipment, and Operation, Including Rigging, Marine Signaling, and Buoys (also class 74c, d), Ships' Furniture and Closets, Apparatus for the Observation and Measurement of the Vibrations or Other Movements, and the Rigidity of Ships, Submarine Vessels, Towing (Tow paths, 16a, c; motor vehicles for towing, 20b, 1, 63c), Marine Life Saving (open lifeboats, class 65c), Also Life Preservers, Diving Apparatus, and Means for Calming the Sea.

## SHIPBUILDING, FORM, STRUCTURE, AND DESIGN OF SHIPS. (Gr. 1-8.)

1. Hull forms in general.
2. Special hull forms (spherical, cylindrical, drum and roller ships, buoyant propellers, etc.).
3. Structure of the hull.
4. Submarine boats.
5. Vessels for carrying on submarine operations and the related diving bells. (Cf. 84c, 3.)
6. Freighters (barges, lighters), special arrangements for transportation of goods, animals, etc.
7. Fishing vessels and vessels used for transporting fish. (Cf. 45h, 18.)
8. Ice breakers (boats and apparatus for maintaining marine routes free from ice).

## EQUIPMENT FOR SHIPS. (Gr. 9-26.)

9. Devices for lessening the friction and resistance, exclusive of group 28, and increasing the velocity of vessels, hydroplanes.
10. Windows and doors for ships. (Cf. 37d, 8-17; port holes, 65c, 1.)
11. Ships' closets, lavatories, and the like. (Cf. 34k, 1, 6; 85c, 21; 85h.)
12. Hatches and appurtenances, manholes, drop ports, and skylights. (Skylights and hatches for buildings, 37c, 9.)
13. Masts, yards, and appurtenances. (Manufacture of masts from metal tubing, 7b, 20.)
14. Sails (construction and arrangement).
15. Rigging in general, reefing apparatus, etc.
16. Means for fastening cables in general upon ships.
17. Ventilating, heating, disinfecting, and fire-extinguishing systems in vessels. (Cf. 61a, b; 81e, 37-38.)
18. Ships' smokestacks.
19. Bulkhead doors. (Cf. 37d, 18-24.)
20. Anchor mechanism for ships, including tackle.
21. Ash ejectors for ships.
22. Mechanism for removing bilge water.
23. Lighting for ships.
24. Protective apparatus for sailors.
25. Hoisting mechanism for ships. (Cf. 35c.)
26. Lessening the visibility of ships, including consumption or disposal of smoke, smokeless furnaces for ships. (Cf. 20b, 14; 24a, 18-22.)
27. Provisions for preventing marine growths upon the hull, preservation of the hull. (Marine paints and paints for preventing rust, 22g, 7.)
28. Cleaning the exterior of ships' hulls.

## ARTICLES FOR THE EQUIPMENT OF SHIPS. (Gr. 29-37.)

29. Apparatus for maintaining articles in a horizontal position (Cf. gr. 30, 31; 65e, 1) and apparatus for preventing seasickness. (Cf. 30d, 22; 30h, 3.)

30. Ships' berths. (Furniture, etc., not designed exclusively for use on board ships, 34g, i.)
31. Cabin tables, chairs, and other cabin furniture.
32. Stairs, ladders, and landing planks for ships. (Cf. 37d, 1-4; 341, 23.)
33. Articles for the equipment of ships, exclusive of gr. 29-32.
34. Ships' anchors. (Cf. gr. 20, 35.)
35. Drags (sea anchors and drag anchors).
36. Apparatus for preparing drinking water for vessels. (Cf. 85a.)
37. Apparatus for the observation and measurement of vibrations and other movements of ships and of rigidity.

## BOAT-HANDLING EQUIPMENT. (Gr. 38-41.)

38. Boat-lowering apparatus. (Davits and boat-crane structure, gr. 40.)
39. Boat storing and lashing apparatus.
40. Davits and boat cranes (structure).
41. Apparatus for releasing boats from their supports.

## STEERING MECHANISM FOR SHIPS. (Gr. 42-51.)

42. Electric steering apparatus.
43. Steering vessels from a distance by means of electrical vibrations, sound waves, etc. (Cf. 65d, 3.)
44. Hydraulic steering apparatus.
45. Steam steering apparatus.
46. Hand steering apparatus, including combined hand and steam steering.
47. Rudders and fastenings for the same.
48. Rudder controlling elements [arrangement of ropes, etc.]
49. Apparatus for stopping ships by means of pivoted members arranged upon the hull and means for producing a resistance upon one side for the purpose of steering.
50. Steering propellers. (Cf. 65f, 3-11.)
51. Other kinds of steering apparatus for ships exclusive of gr. 42-46, 49, 50.

## NAVIGATION OF CANALS AND STREAMS. (Gr. 52-55.)

52. Chain towage. [Fixed cable.]
53. Towing in general. (Towing locomotives, 20b, 9; tracks, 19a, 23.)
54. Elements of towing apparatus. (Hawsers, chains, hooks, etc.)
55. Ferries. (Cf. 19d, 6.)

## MARINE SIGNALING. (Gr. 56-63.)

56. Floating light projectiles and signal fires. (Cf. 72d, 19.)
57. Signaling systems for steering.
58. Navigation signal systems. (Cf. 74b, 7; 74d, 1-10.)
59. Engine signaling for ships. (Cf. 74b, 5, 6; 74c, 1-13.)
60. Devices for indicating the presence of water in ships; sounding tubes. (Cf. 74b, 1; 42c, 27.)
61. Miscellaneous signaling, including draft indicators.
62. Devices for signaling by means of electric vibrations, sound waves and the like, also for the purpose of preventing collisions. (Cf. 74d, 6.)
63. Buoys and other marine signals, lightships, etc. (Cf. 74d, 1-7.)

## MARINE LIFE SAVING. (Gr. 64-74.) (Mechanism for escape from submarine boats, gr. 4; cf. 21a, 66-71; 74 c and d.)

64. Lifeboats, life rafts, and the like.
65. Parts of ships designed for life-saving purposes.

## 65a—Continued.

66. Life preservers in the form of buoys, rings, articles of clothing, and the like, which are filled with cork or other buoyant material.
67. Same, designed to be inflated with air.
68. Same, designed to be made buoyant by evolution of gas.
69. Same, designed to automatically fill with air upon being opened out.
70. Same, with arrangements for illumination.
71. Miscellaneous appliances for rescue from drowning, exclusive of gr. 66-70.
72. Coast life-saving systems.
73. Divers' suits (diving apparatus). (Diving vessels for submarine operations, 65a, 5.)
74. Swimming apparatus.

## MARINE SAFETY DEVICES. (Gr. 75-80.)

75. Apparatus for preventing the capsizing and sinking of vessels.
76. Apparatus for preventing and diminishing the force of collisions (also fog-dispelling apparatus). (Cf. gr. 62.)
77. Apparatus for preventing ships from running aground; depth indicators. (Cf. 42c, 28-31.)
78. Leak-stopping apparatus.
79. Means for calming the waves (applying oil to the sea).
80. Apparatus for preventing rolling of vessels.

81. Loading and unloading vessels. (Cf. 81e, 23.)
82. Miscellaneous mechanism connected with ships, exclusive of gr. 1-81, including pontoons for floating bridges. (Floating bridges, 19d, 6.)

## 65b. Arrangement of Slips and Dry Docks and other Apparatus for Hauling Out or Launching for the Purpose of Building or Repairing Ships, Floating Docks, Raising Sunken Ships. (Shiplifting mechanism, class 84b.)

1. Slips, also apparatus in connection with slips for hauling out or launching.
2. Floating and dry docks and equipment therefor, apparatus for careening ships, also for docking separate parts of the vessel [e. g., propellers].
3. Raising sunken vessels and other objects.
4. Apparatus for indicating the position of sunken vessels and other objects.
5. Apparatus for floating stranded ships.

## 65c. Boats and Other Water Vehicles, Including Means for Propulsion by Man or Animal Power.

## BOAT CONSTRUCTION AND EQUIPMENT. (Gr. 1-4.)

1. Boats in general, construction and equipment.
2. Collapsible boats.
3. Special safety devices and the like on boats.
4. Roller or sliding seats for boats.

## BOAT PROPULSION BY MAN OR ANIMAL POWER. (Gr. 5-11.)

5. Oars.
6. Rowlocks.
7. Rowing apparatus.
8. Bow-facing oars.
9. Propulsion of boats by means of treadles.
10. Hand-operated driving mechanism for boats, exclusive of gr. 7, 8.

## 65c—Continued.

11. Other driving mechanism for boats, exclusive of gr. 5-10.

12. Vehicles for use both on land and water.

## 65d. Torpedoes and Mines.

1. Torpedoes in general.
2. Torpedo steering.
3. Steering torpedoes from a distance by means of electric vibrations, sound waves, etc. (Cf. 65a, 43.)
4. Exploding torpedoes.
5. Driving mechanism for torpedoes.
6. Under-water broadside tubes for torpedoes.
7. Other discharging apparatus (launching tubes) for torpedoes.
8. Torpedo nets for ships and harbor defenses and means for destroying same.
9. Submarine mines.

## 65e. Armament of Ships. (Exclusive of ordnance and ammunition, class 72.)

1. Gunners' equipment on war vessels. (Cf. 65a, 29.)
2. Ammunition hoists. (Cf. 72d, 21.)
3. Armor. (Cf. 72g, 3.)
4. Other apparatus on war vessels for offense and defense, exclusive of torpedo armament.

## 65f. Marine Propulsion, Including Paddle Wheels and Screw Propellers, Reaction Propellers and Other Ships' Propellers, and Mechanism for Driving Same. (Oars, 65c; sails, 65a.)

(Apparatus for stopping ships, 65a, 49; driving mechanism for submarine boats, 65a, 4.)

## PADDLE WHEELS. (Gr. 1-2.)

1. Paddle wheels in general.
2. Stern wheels.

## SCREW PROPELLERS AND MOUNTING OF THE SAME. (Gr. 3-11.)

3. Screw propellers in general. (Cf. 65a, 50.)
4. Incased propellers, turbine propellers.
5. Propellers with exits for air; also hollow propellers.
6. Arrangement of propellers on the ship.
7. Propeller hubs and blade fastenings.
8. Propellers with adjustable blades.
9. Propeller shafts and couplings.
10. Propeller shaft bearings, thrust bearings for ships.
11. Stern tubes for ships.

## REACTION PROPELLERS. (Gr. 12-14.)

12. Propulsion by means of water jets.
13. Propulsion by means of steam, gas, or air jets.
14. Propulsion by means of explosions of gas. (Under water exhaust, 65a, 26.)

## MISCELLANEOUS PROPELLERS. (Gr. 15-18.) (Buoyant propellers, 65a, 2.)

15. Oscillating propellers. ["Klappenpropeller."]
16. Reciprocating propellers. ["Stospropeller."]
17. Paddle chain propellers.
18. Fish tail and fin propellers.



## 65f.—Continued.

MECHANICAL ACTUATION OF SHIPS' PROPELLERS.  
(Gr. 19-26.)

19. Actuation of ships' propellers by means of electricity.
20. Same by steam engines.
21. Same by turbines.
22. Same by wind wheels.
23. Same by benzine, petroleum, or gas engines.
24. Driving mechanism for ships' propellers, exclusive of gr. 19-23, as spring motors and the like.
25. Propulsion by means of water currents or waves.
26. Miscellaneous mechanical contrivances for the propulsion of ships.

27. Marine engine governors which are controlled by movements of the ship, e. g., as a result of movements of the sea. (Cf. 60, 12.)
28. Reversing apparatus for marine engines with a constant direction of rotation.

## CLASS 66.—BUTCHERING AND MEAT TREATMENT.

## 66a. Butchering.

1. Slaughtering apparatus in general.
2. Apparatus for slaughtering by means of bolts. (Slaughtering masks, slaughtering pistols, cartridges for slaughtering pistols.)
3. Slaughtering apparatus for poultry (pliers, shears).
4. Apparatus for fettering animals to be slaughtered, Kosher slaughtering. (Cf. 30c, 5; 45b, 9; 56a, 26.)
5. Blood-stirring apparatus, blood cans, slaughterhouse pails, vehicles for entrails.
6. Spreaders, gambrels, etc., and hoisting apparatus for slaughterhouses, slaughterhouse arrangements.
7. Apparatus for scalding, scraping, removing the hair, and singeing in connection with butchering. (Cf. 28a, 1.)
8. Butchers' tools, including meat saws, butcher knives, skinning knives. (Surgeons' saws, 30a, 9.)

## 66b. Meat Treatment.

1. Meat-cutting machines with rotating circular or sickle-shaped knives.
2. Meat-cutting machines with perforated disks.
3. Meat-cutting machines with spiked cylinders.
4. Cutting machines with knife cylinders.
5. Meat-chopping machines [vertically reciprocating].
6. Meat-chopping machines [rockers].
7. Hand-operated meat choppers.
8. Cube-cutting machines.
9. Slicing machines for meats. (Cf. gr. 2 to 5; 34b, 1, 6.)
10. Apparatus for mixing, pounding, and pressing meat, including sausage. (Cf. gr. 12.)
11. Sausage making. (Cf. gr. 10.)
12. Meat blocks, and trimming off and cleaning same.
13. Apparatus for hanging meat and sausage.
14. Miscellaneous features in the art of meat handling, including machines for extracting sinews from chopped meat, meat troughs, apparatus for holding meat and bones for cutting, bone cleaning, bone-boring machines, and skinning.
15. Working up the intestines, intestine cleaning, tripe-cutting machines, etc. (Cf. 28b, 24.)

## CLASS 67.—GRINDING AND POLISHING.

- 67a. Grinding and Polishing Processes, Machines and Apparatus, Including Truing of Grindstones. (Polishing, especially of metal: for wood see 38c, 2; needles, 7e, 5; teeth, 30b, 5.)

## TOOL GRINDING MACHINES. (Gr. 1-5.)

1. Machines for grinding cutters and reamers.
2. Machines for grinding twist drills.
3. Machines for grinding files.
4. Machines for grinding and sharpening embroidery machine borers and the tools of engraving machines.
5. Machines for grinding tools of a general nature (awls, chisels, gouges, plane bits, "Kronhammer," etc.).

## KNIFE GRINDING AND POLISHING MACHINES. (Gr. 6-8.)

6. Machines for grinding knives and shears.
7. Machines for grinding razors.
8. Machines for grinding knives designed for special uses (shear blades, doctor blades, cross-shaped knives, circular and disk knives, mowing machine knives, and knives with spiral edges, hoop knives).

## MACHINES FOR GRINDING AND POLISHING CURVED SURFACES. (Gr. 9-12.)

9. Machines for grinding and polishing cylindrical bodies in general, as screw threads, shafts, wire, canes.
10. Machines for grinding boxing and journals.
11. Grinding off the cylinders of electric machines, e. g., commutators, and grinding down machine cylinders in working position.
12. Ball grinding machines.

## MACHINES FOR GRINDING AND POLISHING FLAT SURFACES. (Gr. 13-15.)

13. Sheet-metal grinding machines.
14. Stone grinding machines.
15. Machines for grinding and polishing plate glass.

## MACHINES FOR GRINDING AND POLISHING SPECIAL SURFACES, AS FACETS, OPTICAL SURFACES, AND THE LIKE. (Gr. 16-21.)

16. Beveling plate glass.
17. Machines for grinding and polishing hollow glassware.
18. Cutting facets on hollow glassware.
19. Machines for grinding spectacle and other lenses.
20. Machines for grinding parabolic surfaces.
21. Machines for grinding beads and jewels.

## MACHINES FOR GRINDING AND POLISHING ARTICLES IN BULK. (Gr. 22-25.)

22. Machines for grinding pens and needles. (Cf. gr. 23; 7e, 5.)
23. Rumbles.
24. Polishing buttons, screws, cap-shaped bodies.
25. Polishing bottle caps.

## AUXILIARY APPARATUS FOR GRINDING AND POLISHING MACHINES. (Gr. 26-28.)

26. Truing mechanism for grindstones.

## 67a—Continued.

27. Apparatus for supplying water and abrasives to grinding mechanism.
28. Dust removing and other protective apparatus for grinding machines.

## 29. Grinding belts. (Cf. gr. 22.)

## 30. Card and comb grinding machines. (Cf. 76b, 16.)

31. Miscellaneous processes and apparatus for grinding and polishing, as smoothing (rough polishing) of forks, grinding and polishing horn and mother-of-pearl, grinding gear wheels, center punch points, slides and slide grooves, handles, scabbards, spoons, propellers, grinding off the rough edge of railway rails, grinding in cocks and other parts requiring accurate fit.

32. Elements in connection with processes and apparatus for grinding and polishing, e. g., mounting driving mechanism, movement of the work, work holders, electric mechanism for grinding machines.

## 67b. Sand Blast Apparatus.

(Apparatus for grinding articles, surfaces or materials by means of sand or similar granular material, processes and elements, including also drum-shaped work holders.)

## 67c. Grinding Tools, e. g., Grinding and Polishing Wheels and Knife Sharpeners, Manufacture of Abrasives.

1. Grinding and polishing wheels.
2. Grinding and polishing tools in general. (Cf. 71c, 56.)
3. Manufacture of abrasives.
4. Knife sharpeners
5. Honing devices for razors.

## CLASS 68.—LOCKS, HINGES, AND OTHER WINDOW AND DOOR FITTINGS, ALSO SAFES.

- 68a. Locks and Appurtenances, e. g., Handles, Keys, Safety Catches and the Like, for Doors, Cupboards, Drawers and Chests, and Locks Capable of General Use; also Apparatus for Locking and Unlocking Keyless Locks, Devices for Securing Clothing, Lockable Clothing Hooks, and Shackles.

## LOCKS WITH ROTARY KEYS. (Gr. 1-7.)

1. Chubb locks, exclusive of gr. 2.
2. Chubb locks with tumblers of various arrangements.
3. "Protector" locks and similar rotary cylinder locks for rotary keys [special structures to prevent reproduction of the keys].
4. Locks comprising disks, roll backs or sleeves rotated by the key, or with key bits remaining in the lock.
5. Locks with tumblers rotating about the axis of the key.
6. Locks in which the tumblers are directed against the key upon turning the latter.
7. Locks with movable pawls to engage with the key.

LOCKS WITH PUSH KEYS. (Gr. 8-12.) (The tumblers are moved by the insertion of the key. For locks with rack-bar keys, see gr. 14.)

8. Yale locks.
9. Bramah and Bramah-Chubb locks.

## 68a—Continued.

10. Push key locks comprising tumbler cylinders turned by the key, exclusive of gr. 8-9.
11. Push key locks without tumbler cylinders turned by the key.
12. Locks for push keys in which the key is provided with openings for the entrance of projections on the tumblers.

13. Locks with push keys in which the key, after insertion, serves as a striker or guide for the tumblers.

14. Locks with rack-bar keys (the key meshes with a toothed wheel mounted in the lock).

## LOCKS WITH KEYS OF VARIOUS KINDS. (Gr. 15-19.)

15. Locks with keys which serve to fill out a detent groove for the tumblers.

16. Locks with keys which may be shifted laterally (exclusive of those in gr. 15).

17. Locks with pull keys.

18. Locks which are unlocked by the mere insertion of the key.

19. Locks with screw keys.

## LOCKS WITH A PLURALITY OF KEYS. (Gr. 20-22.)

20. Locks with master and pass keys.

21. Locks for two persons (safety-deposit locks).

22. Locks which can be locked with any desired key of a series.

23. Locks with multi-bitted keys in which each bit has a separate function. (Cf. gr. 1, 2, 58, 86, etc.)

24. Coin-controlled locks and other check-controlled locks. (Cf. gr. 108; 43b, 51, 55.)

## COMBINATION LOCKS. (Gr. 25-31.)

25. Combination locks in general. (Cf. gr. 32-33, 100, etc.)

26. Combination locks with tumbler disks or rings arranged upon a single axis, each disk being directly adjusted independently of the others.

27. Combination locks with tumblers upon a single axis, all of the disks being adjusted by a shiftable rotary knob.

28. Combination locks with tumbler disks upon a single axis, all the disks being adjusted by a rotary knob without shifting the latter.

29. Combination locks with tumbler disks upon different axes.

30. Combination locks with push or pull knobs, slides, and the like.

31. Puzzle locks.

## LOCKS COMPRISING MEANS FOR MAINTAINING A CHECK ON THE OPERATION OF THE LOCK. (Gr. 32-33.)

32. Individual check locks and seal locks (for giving visible indication of the unauthorized opening of the lock), (exclusive of gr. 93).

33. Indicating locks and keys (with visible indication as to whether the lock is locked or unlocked).

34. Time locks.



## 68a—Continued.

ALARM LOCKS INCLUDING SAFE LOCKS WITH ALARM DEVICES. (Gr. 35-37.) (Cf. 68c, 5; alarm devices separate from the locks, 74a, 21-29.)

- 35. Alarm locks with mechanically operated bells on the lock or key.
- 36. Alarm locks with detonating alarms. (Cf. 74a, 29.)
- 37. Electric alarm locks and alarm keys.

DEVICES FOR LOCKING AND UNLOCKING KEYLESS LOCKS, ESPECIALLY ELECTRICAL DEVICES. (Gr. 38-41.) (Cf. 68d, 18.)

- 38. Devices for unlocking locks by electrical or magnetic means.
- 39. Devices for electrically locking, or both unlocking and locking keyless locks.
- 40. Devices for bolting and unbolting keyless locks by pneumatic, hydraulic, or mechanical means.
- 41. Locks with miscellaneous apparatus for electrically bolting or unbolting, exclusive of gr. 38, 39, 42.

- 42. Locks in which the key controls the closing of a circuit, or the application of fluid pressure.
- 43. Locks without springs.
- 44. Locks in which the parts are merely loosely laid together.
- 45. Locks which are convertible for use right or left, or adjustable for different lengths of bolts. (Locks for doors which open either right or left, 68c, 7.)
- 46. Mortise locks and locks adapted to be readily withdrawn.
- 47. Locks in which the bolt and the keeper have interlocking engagement. (Cf. gr. 96.)

LATCH-BOLT LOCKS, I. E., LOCKS IN WHICH THE LATCH SERVES ALSO AS A LOCKING BOLT. (Gr. 48-55.)

- 48. Latch-bolt locks in general, exclusive of gr. 49-55.
- 49. Latch-bolt locks in which the latch is fastened directly by tumblers.
- 50. Latch-bolt locks in which the latch is fastened directly by transverse bolts or turn buttons, the lock handle being also fastened.
- 51. Latch-bolt locks in which the latch is fastened directly by transverse bolts, the lock handle being disconnected.
- 52. Latch-bolt locks in which the latch is fastened by hidden parallel members.
- 53. Latch-bolt locks in which the latches are pivoted.
- 54. Latch-bolt locks in which the roll-back is directly fastened, exclusive of gr. 68.
- 55. Latch-bolt locks in which the lock handle is disconnected without fastening the latch.

LOCKS WITH LATCHES SEPARATE FROM THE BOLTS, OR WITH A PLURALITY OF LATCHES AND BOLTS. (Gr. 56-59.)

- 56. Locks with means for bolting the latch.
- 57. Locks in which the latch is moved by a bolt, or the bolt by a latch, or one latch by another, etc.
- 58. Locks or bolts lying one behind another (locks for keys with a series of bits).
- 59. Locks with two independent handles. (Cf. gr. 91.)

- 60. Miscellaneous features in connection with the latch and roll-back of locks. (Cf. gr. 90.)

## 68a—Continued.

- 61. Locks which are opened by the application of a pull or push [e. g., by a push-button].
- 62. Locks comprising means for retaining the latch or bolt in the open position. (Cf. gr. 91.)

LOCKS COMPRISING DEVICES TO PREVENT THE WITHDRAWAL OF THE KEY. (Gr. 63-65.)

- 63. Locks comprising devices to prevent the withdrawal of the key before the bolt has been entirely thrown.
- 64. Locks comprising devices to prevent the withdrawal of the key before the door has been completely closed.
- 65. Locks comprising traps for the keys [trap locks].

LOCK SECURING DEVICES, I. E., KEYHOLE GUARDS AND DEVICES FOR FASTENING THE KEY OR THE HANDLE. (Gr. 66-68.) (Keyholes, gr. 78.)

- 66. Keyhole guards with stems and bits.
- 67. Keyhole guards with covers or slides. (Cf. gr. 68.)
- 68. Fasteners for the key, or the lock handle, or both, also means for removing a key left sticking in the lock. (Cf. gr. 67.)

LOCK HANDLES AND KNOBS AND MEANS FOR FASTENING THE SAME, ALSO LOCK ROSES. (Gr. 69-73.) (Cf. gr. 59, and window fasteners, 68b, 9-16.)

- 69. Miscellaneous handle structures and fastenings, including handles which are adjustable for different thicknesses of doors.
- 70. Fastening the lock handle by means of the rose.
- 71. Fastening the handle shank upon the spindle by screws, springs, or snap bolts.
- 72. Fastening the spindle to the roll-back.
- 73. Lock handles which are laterally adjustable.

LOCK PARTS (exclusive of those mentioned under gr. 69-73 and elsewhere.) (Gr. 74-82.)

- 74. Bolts and latches, bolt detents, night latches and the like, for locks. (Cf. bolts, 68b, 1-5.)
- 75. Tumblers including those adjustable by hand and those positively moved.
- 76. Spring arrangements for locks.
- 77. Lock wards, key pins, and key guides.
- 78. Keyholes, including offset keyholes. (Keyhole guards, gr. 66-67.)
- 79. Lock casings, fastenings and escutcheons, lock keepers, striking plates and bolt staples, keyhole escutcheons, etc.
- 80. Lubricating devices for locks. (Cf. 47e.)
- 81. Lock and key illumination.
- 82. Miscellaneous lock elements, exclusive of gr. 74-81.

KEYS. (Gr. 83-86.)

- 83. Miscellaneous keys, skeleton keys, lock picks, manufacture of keys and key holders. (Cf. 49g.)
- 84. Adjustable keys.
- 85. Keys with pivoted bits.
- 86. Keys with opposite movement or adjustment of the bits in the lock. (Cf. gr. 23.)

- 87. Safety locks for various purposes. ["Safety" locks comprise special means for preventing unauthorized opening, as multiple tumblers, etc.]

- 88. Locks for various purposes, exclusive of safety locks, gr. 87. (Cf. gr. 89-110.)

## 68a—Continued.

DOOR LOCKS. (Gr. 89-95.) (Cf. gr. 20, 24, 32-34, 38-41, 42, 47-73.)

89. Door locks in general.

90. Locks for swing doors. (Locks for doors opening either right or left, cf. 68c, 7.)

91. Door locks for railway passenger cars and other vehicles, exclusive of gr. 93.

92. Sliding-door locks, exclusive of group 93.

93. Railway freight car locks, especially those with means for maintaining a check on their operation. (Cf. gr. 32.)

94. Locks with door chains combined with bolts. (Cf. 68b, 8.)

95. Inserted locks. [Cylinder locks.]

FURNITURE LOCKS, I. E., FOR CUPBOARDS, DRAWERS, CHESTS, BOXES, ETC. (Gr. 96-98.)

96. Furniture locks exclusive of group 97.

97. Drawer locks.

98. Locks for chests and boxes. (Cf. gr. 99.) (Locks for trunks, baskets, traveling bags, etc., 33b, 4, 11-12; for albums, portfolios, etc., 11e, 2.)

99. Staple locks, hasp locks, and the like. (Cf. gr. 98.)

PADLOCKS (exclusive of combination padlocks, gr. 25-31). (Gr. 100-106.) (Chain locks, 47d, 15; rope locks, 47d, 11.)

100. Padlocks in general.

101. Padlocks with pivoted shackles and locking means on the free end.

102. Padlocks with pivoted shackles and locking means on the joint end.

103. Padlocks with pivoted shackles and locking means on both the free and joint ends.

104. Padlocks with sliding shackles and rotary shackles, also sliding rotary and sliding pivoted shackles.

105. Padlocks with ring shackles, also ring fastenings for the latter. (Ring fastenings which must be destroyed to release them, 81c, 16.)

106. Pincer-shaped padlocks. (Cf. gr. 108.)

LOCKING DEVICES FOR CLOTHING, CANES, UMBRELLAS, and CYCLES, ALSO SHACKLES FOR PRISONERS. (Gr. 107-110.)

107. Devices for locking clothing, lockable clothing holders and hangers. (Clothing holders and hangers without locking devices, 3b, 9; cane holders without locking devices, 33a, 13; non-locking devices for preventing the putting on of hats, 41c, 6.)

108. Lockable clothing hooks. (Clothing hooks without locking devices, 34f, 22; coin-controlled locking hooks, 43b, 51.)

109. Bicycle locks and miscellaneous locking devices, exclusive of groups 107-108. (Coin-controlled locking hooks, 43b, 51; locking devices mounted on the cycle, 63f, 6.)

110. Shackles for prisoners.

68b. Bolts, Bars, Door Chains, Window Fastenings; Devices for Shifting, Locking, and Holding Transoms, Dormer Windows, and Sliding Windows; Hasps, Staples, and Analogous Fastening Devices.

BOLTS. (Gr. 1-5.)

1. Bolts in general and devices for simultaneously bolting several compartments or drawers, bolts with safety attachments, exclusive of gr. 2-5. (Cf. gr. 9-16.)

## 68b—Continued.

2. Flush bolts, including those which do not permit the closing of the loose leaf of the door until the bolt has been shot.

3. Automatic bolts for double doors.

4. Bolts of the latch type. (Cf. 68a, 60.)

5. Door bars, props, and the like.

DOOR CHECKS OR SECURERS AND DOOR CHAINS. (Gr. 6-8.) (Cf. 74a, 21-29.)

6. Door checks which allow the door to be partially opened.

7. Door securers which allow no movement of the door.

8. Door chains. (Door chains combined with locks, 68a, 94.)

WINDOW FASTENERS. (Gr. 9-16.) (Cf. gr. 17-27.)

9. Window fasteners in general, exclusive of gr. 17-27.

10. Reciprocating bolts, especially multiple bolt fastenings for windows. ["Basquill" bolts.] (Cf. gr. 1-2.)

11. Rotary bar fasteners, especially Spanish sash bolts. [Rotary bars provided with hooks.]

12. Turn buttons, button fasteners, swing latches, and the like for windows.

13. Hasps for window fasteners.

14. Fasteners and connectors for double windows and windows with double glass.

15. Securing window fasteners against unauthorized opening. (Cf. 74a, 22.)

16. Knobs, rotary handles, and like window fastenings, together with means for attaching the same. (Cf. 68a, 69-73.)

DEVICES FOR THE SHIFTING, BOLTING, AND HOLDING IN ADJUSTED POSITION OF TRANSOMS, ETC., DORMER AND SLIDING WINDOWS. (Gr. 17-27.) (Devices for holding windows in adjusted position, 68d, 19-34.)

17. Devices in general for shifting, bolting, and holding transoms and the like in adjusted position, also elements of such devices.

18. Same operated by cords.

19. Same operated by hand rods.

20. Same operated by sliding bars.

21. Same operated by rotary bars.

22. Same operated by shear movements [pivoted arms, lazy tongs, and the like].

23. Same operated by toggle levers.

24. Same operated by screws, rack bars, automatically wound cords, chains, and the like.

25. Transom fasteners comprising means for loosening the sash.

26. Devices for shifting, bolting, holding, and counterbalancing dormer windows.

27. Devices for shifting, bolting, holding, and counterbalancing sliding windows.

28. Hasps, staples, and analogous locking apparatus, also door-fastening checks. (Manufacture of staples, 7e, 19; door buffers, 68d, 16.)

68c. Hinges, Especially for Doors and Windows, Including Those for Doors and Windows Which are Movable About a Plurality of Axes, or in Different Directions (exclusive of self-closing hinges, stop hinges, and safe hinges under d and e), Also Sliding Door Hangers (exclusive of self-closing hangers under d), and Door and Window Fittings of Other Kinds.

1. Hinges in general, especially for doors and windows. (Processes of manufacture, 7c, 36.)



## 68c—Continued.

2. Adjustable door and window hinges.
3. Easily removable door and window hinges.
4. Ball-bearing hinges.
5. Door and window hinges with lubricating devices.
6. Convertible right or left hinges for doors and windows.
7. Door hinges and fasteners for doors which open either right or left, swing-door hinges (chiefly doors with a plurality of axes).
8. Window hinges and appurtenances, for windows which swing either in or out.
9. Sliding door hangers (exclusive of self-closing hangers, 68d, 1).
10. Miscellaneous door and window fittings exclusive of gr. 1-9.

**68d. Closers, Openers, Brakes, Buffers and Holders for Windows and Doors, also Self-Closing Hinges, Stop Hinges, and Self-Closing Sliding Door Hangers With or Without Brakes.** (Closers, openers and holders for transoms, dormer and sliding windows, 68b.)

**DOOR CLOSERS.** (Gr. 1-7.)

1. Door closers in general, and elements thereof (door closers with retarding, stopping, or alarm devices, with combined swing and gravity operation, with a plurality of springs, self-closing hangers for sliding doors, etc.).
2. Gravity door closers for lift doors, exclusive of gr. 1.
3. Gravity door closers for swing doors.
4. Spring door closers for lift doors, exclusive of gr. 1.
5. Spring door closers for swing doors.
6. Door closers comprising self-closing gravitating hinges (for gravitating hinges and obliquely set hinges, cf. gr. 3).
7. Door closers comprising spring-operated self-closing hinges (for spring hinges, cf. gr. 5).

8. Automatic window-closing devices.

**DOOR CHECKS, ALSO WINDOW CHECKS, WITH OR WITHOUT CLOSERS.** (Gr. 9-17.) (Cf. gr. 19-34; door stops, 68b, 28.)

9. Door and window checks in general, also elements.
10. Door checks with pneumatic piston brakes. (Cf. gr. 12.)
11. Door checks with liquid piston brakes. (Cf. gr. 12.)
12. Checks for swing doors with pneumatic or liquid brakes. (Cf. gr. 10-11.)
13. Door checks comprising rotary pump brakes.
14. Door checks comprising friction brakes.
15. Door checks comprising counteracting springs, fly-wheels, etc.
16. Buffers to prevent the slamming of doors, also stops to limit the opening movement of doors. (Door-fastening stops, 68b, 28.)
17. Self-closing door hinges with brakes for checks.

18. Devices for opening and closing doors, windows, and shutters by means of levers, treadles, cords, etc., also door openers, per se, exclusive of 68b, 17-27 (Lock openers, 68a, 38).

**DEVICES FOR HOLDING WINDOWS, SHUTTERS, AND DOORS IN ADJUSTED POSITIONS.** (Gr. 19-34.) (Holders for transoms, dormer and sliding windows, 68b, 17-27.)

19. Holders for windows, shutters, and doors in general, exclusive of 68b, 17-27.

## 68d—Continued.

20. Simple storm hooks and links.
21. Storm hooks with notched rails and adjustable hooks. (Cf. gr. 25.)
22. Catches, snaps, spring bolts, and the like (in combination with curved rails, gr. 24).
23. Hooks, bolts, and the like which extend into the sash groove.
24. Holders comprising means for engagement with curved rails.
25. Jointed rack bars or perforated bars. (Cf. gr. 21 and 24).
26. Angle rods or toggle bars.
27. Extensible rods.
28. Shifting crank gearing.
29. Sliding feet and brake shoes.
30. Stops, chocks, and wedges.
31. Bars and the like connecting the right and left swinging leaves.
32. Yieldable hinges.
33. Holders for double windows.
34. Stop hinges and levers with stop devices in the pivots. (Cf. gr. 26.)

## 68e. Safes and Safe Hinges.

1. Safes in general.
2. Armor plates, etc., for protecting safes, vaults, and cash boxes against theft and fire, including fillings, especially heat-insulating material for double walls.
3. Safe-bolt work, exclusive of the lock mechanism.
4. Safe hinges.
5. Alarm devices, burglar traps, and other mechanism for safes and the like, exclusive of gr. 2-4, and exclusive of locks, 68a, 35-37. (Cf. 74a, 21-29.)

**CLASS 69.—CUTTING IMPLEMENTS, INCLUDING WEAPONS.**

**SHEARS.** (Gr. 1-9.)

1. Shears in general. (Cf. 49b, 17.)
2. Shears in general without handle eyes. (Cf. 45f, 18; 49b.)
3. Buttonhole shears.
4. Pocket scissors.
5. Sheep shears.
6. Shear fastenings, means for regulating the pressure.
7. Coupon shears [for cutting coupons or other rectangular slips, and the like].
9. Miscellaneous devices of the shear type, exclusive of gr. 1-8.

**SHEARING APPARATUS.** (Gr. 10-12.)

10. Hand-operated shearing apparatus.
11. Power-operated shearing apparatus in general, including that operated by human power otherwise than by hand (cf. gr. 10), and that operated by animal power.
12. Shearing apparatus directly power driven or with gearing.

**POCKETKNIVES, TABLE KNIVES, ETC.** (Gr. 13-19.)

13. Pocketknives in general.
14. Pocketknives with loosely inserted springs.
15. Pocketknives in combination with cork pullers, cigar cutters, or other apparatus. (Cf. 87c.)
16. Pocketknife handles, knife sheaths.
17. Pocketknives of various kinds, exclusive of gr. 13-16.
18. Table knives.
19. Miscellaneous knives, exclusive of gr. 13-18.

## 69—Continued.

## RAZORS, ETC. (Gr. 20-21.)

20. Razors. (Cf. gr. 21.)
21. Safety razors and other shaving implements. (Cf. gr. 20; 33c., 9; 67c, 5.)

## CUTTING TOOLS FOR HEWING OR THRUSTING. (Gr. 22-23.) (Cf. gr. 27-28.)

22. Hatchets and axes. (Handle fastenings for the same, 87d, 1.)
23. Spades for military purposes, folding spades, spades combined with saws, picks, hatchets, etc. (Spade-handle fastenings, 87d, 1; spade manufacture, 7c, 41; 7f, 3; spades for agricultural uses, 45a, 4; gun spades, 72a, 4; 72g, 2.)
24. Cutting implements with circular knives (for general use).
25. Cutting tools in general.
26. Cutting apparatus in general, exclusive of gr. 1-25.

## HEWING AND THRUSTING WEAPONS. (Gr. 27-28.)

27. Sabers, swords and the like, and scabbards (combined with firearms, 72a, 32.)
28. Lances and bayonets (combined with firearms, 72a, 32.)

## CLASS 70.—WRITING AND DRAWING IMPLEMENTS.

## 70a. Pencils and the Like, Pencil Holders and Combined Pen and Pencil Holders, Devices for Insuring the Proper Position of the Fingers in Writing, and Crochet-Needle Holders.

1. Pencils for writing or drawing provided with fixed lead or the like, also machines for making lead pencils.
2. Pencils for writing and drawing provided with shiftable lead or the like.
3. Lead pencils with a plurality of lead points [successively supplied].
4. Magazine lead pencils.
5. Holders for writing pencils.
6. Combined pencil and pen holders.
7. Lead pencil and pen holders combined with letter scales, levels, drawing compasses, mariner's compasses, reflectors, calendars, rules, tapes, brushes, glove buttoners, and the like.
8. Crochet-needle holders.
9. Lead-pencil shields.
10. Devices for insuring proper position of the fingers in writing.

## 70b. Writing Pens, Penholders, Reservoir Pens, Fountain Pens, Pen Fillers, Pen Extractors and Cleaners.

1. Writing pens. (Manufacture of pens from sheet metal, 7c, 40.)
2. Reservoir pens. [Ink-retaining attachments.]
3. Penholders.
4. Fountain pens, ordinary.
5. Fountain pens, stylographic.
6. Pen fillers, extractors, and cleaners.

## 70c. Inkwells, Ink Bottles, and Inkstands.

1. Compressed-air inkwells.
2. Inkwells in which the dip depth remains constant.
3. Inkwells in which the dip depth is regulable.

## 70c—Continued.

4. Covers and closures for inkwells.
5. Miscellaneous inkwells, exclusive of gr. 1-4.
6. Ink bottles and inkstands.

## 70d. Blotters, Moisteners for Press Copies, Stamps, and the Like, Mucilage Holders, Stamp Affixers, Hand and Arm Rests and Other Devices for Maintaining Proper Position in Writing, Copy Holders and Turners (see also class 51c), Sealing Devices, Writing Pads, and the Like (copying apparatus and duplicating apparatus, class 15i; stencils, perforating or stippling devices, class 75).

1. Blotters for the use of blotting paper in sheets
2. Blotters for the use of blotting paper in strips or for artificial stone
3. Moisteners for press copies, stamps, and the like
4. Mucilage containers
5. Stamp affixers operating upon stamps in stacks; stamp pickers.
6. Stamp affixers operating upon stamps in strips.
7. Stamp affixers for stamps in sheets
8. Hand and arm rests and other devices to maintain the proper position in writing. (Cf. 30d, 4.)
9. Copy holders and turners. (Cf. 51c, 7-12.)
10. Sealing devices, seals and signets.
11. Writing pads, paper weights, rolls for making and reading of memorandums, and the like
12. Devices for sealing and opening envelopes.
13. Duplicating apparatus and apparatus for producing writing for the blind. (Cf. 15g, 19; 42n, 2.)

## 70e. Slates, Writing Surfaces for Blackboards (paints, class 22g, frames, class 34i), Erasers, Drawing Boards, Drawing Apparatus, Adjustable Supports for Drawing, Thumb Tacks, Rulers, T Squares, Ruling Implements, Pen and Pencil Cases, Pencil Sharpeners, Erasing Devices (painters' appliances, class 75c; drawing instruments, class 42a; paint brushes, class 9), Dispensers and Cutters for Paper in Rolls.

1. Slates.
2. Writing surfaces for blackboards and slates. (Cf. 48c, 6; paints, 22g, 11; frames, 34i, 9.)
3. Blackboard erasers and beating apparatus for erasers.
4. Structure of the body of drawing boards.
5. Tensioning devices for drawing boards. (Cf. gr. 4.)
6. Adjustable supports for drawing, drawing and tracing frames.
7. Thumb tacks.
8. Rulers in general. (Cf. 3d, 1; 42a, 15.)
9. T squares.
10. Miscellaneous drawing appliances, exclusive of gr. 4-9, triangles (Cf. 34i, 6; 42a, 18-20.)
11. Ruling appliances. (Cf. 15f; 42a, 19.)
12. Pen and pencil cases, holders, and racks, including those with calculating machines, book supports, and the like.
13. Pencil sharpeners operated by hand cranks.
14. Pencil sharpeners comprising cutting sleeves turned by hand.
15. Pencil sharpeners in which the pencil is to be drawn over a knife or the knife over the pencil.
16. Miscellaneous pencil sharpeners, exclusive of gr. 13-15.
17. Erasing devices.
18. Dispensers for paper in sheets, and cutters for roll paper and wrapping paper, also for stamps. (Cf. 34k, 9; 54g, 15; automatic venders for stamps, 43b, 27.)



**CLASS 71. BOOTS AND SHOES.****71a. Boots and Shoes.****SHOES, ETC., DISTINGUISHED BY THE NATURE OF THE MATERIAL (Gr. 1-3.)**

1. Woven fabric shoes, etc. (animal or plant fibers).
2. Shoes, etc., of wood, cork, celluloid, paper board, or paper. (Cf. gr. 12.)
3. Shoes, etc., of rubber or gutta-percha.

**SHOES, ETC., DISTINGUISHED BY THE CUT AND THE USE. (Gr. 4-9.)**

4. Top boots and leg boots, also shoes with batwing tabs.
5. Boots with elastic gussets.
6. Laced shoes (shoes with divided uppers).
7. Low shoes, slippers, and sandals.
8. Overshoes.
9. Maltsters' shoes.

**SHOES, ETC., WITH SANITARY ARRANGEMENTS. (Gr. 10-12.)**

10. Heated shoes.
11. Ventilated shoes.
12. Shoes with miscellaneous sanitary arrangements, exclusive of gr. 10-11. (Cf. gr. 2-3; 30d, 5; 30f.)

**SHOES, ETC., DISTINGUISHED BY THE WAY IN WHICH THE PARTS ARE FASTENED TOGETHER. (Gr. 13-16.)**

13. Shoes which are sewed or nailed through and through [McKay shoes].
14. Weltd shoes. (Cf. gr. 21.)
15. Turned shoes.
16. Shoes put together in various ways, exclusive of gr. 13-15.

**17. Miscellaneous shoes, etc., exclusive of gr. 16.****SOLES AND HEELS. (Gr. 18-28.)**

18. Fastening of the soles and heels. (Cf. 71c, 36.)
19. Outsoles.
20. Insoles.
21. Welts. (Cf. Gr. 14.)
22. Filling soles. (Cf. 30d, 5.)
23. Leather heels.
24. Rubber heels.
25. Heels from miscellaneous materials, exclusive of gr. 23-24.
26. Spring and pneumatic heels.
27. Exchangeable heels. (Cf. Gr. 18.)
28. Rotatable (reversible) heels.

**UPPERS, QUARTERS, COUNTERS, AND OTHER SHOE PARTS. (Gr. 29-32.)**

29. Quarters and uppers.
30. Counters.
31. Toe caps, including tips or ornamental caps and toe stiffeners. (Cf. 71b, 12.)
32. Miscellaneous shoe parts, exclusive of gr. 18-31, especially straps or loops.
33. Nails, slugs, and staples for shoes.

**71b. Shoe Fastenings, Laces, Shoe Attachments, Spurs and the Like.****SHOE FASTENINGS AND LACES. (Gr. 1-9.) (Cf. 3c, 1-9.)**

1. Laced fastenings for articles of clothing, including corsets, gloves, and shoes.
2. Lacing hooks and eyelets. (Manufacture of same from sheet metal, 7c, 45.)
3. Locks for laces.
4. Lacing ribbons or ties.
5. Button fastenings for shoes.
6. Hook fastenings and slide fastenings for shoes.
7. Clasp fastenings and clasp-buckle fastenings for shoes.
8. Miscellaneous shoe fastenings, exclusive of gr. 1-7.
9. Formation of the shoe to adapt it to special fastenings.

**SHOE ATTACHMENTS. (Gr. 10-14.)**

10. Heel tips for shoes.
11. Attachments for soles and heels.
12. Shoe-tip attachments, toe-cap protectors. (Cf. 71a, 31.)
13. Ice spurs, mountain-climbing spikes, and iron covers for shoes. (Cf. 45i, 11; 77a, 13.)
14. Miscellaneous attachments for shoes, exclusive of gr. 10-13.

**SPURS. (Gr. 15-17.)**

15. Spurs and means for fastening the same.
16. Releasable spur fastenings (readily adjustable or removable without tools).
17. Spurs which may be turned up out of the way.

**71c. Shoemaking Machines and Tools, also Eyelet-Setting Machines and Button Fasteners of General Application.****FOOT MEASURING DEVICES, LASTS, SHOEMAKERS' TOOLS. (Gr. 1-11.)**

1. Foot measuring devices.
2. Lasts for making and repairing shoes, devices for removing lasts and for reinserting the last.
3. Wedge locks for lasts.
4. Stretching and spreading lasts, boot trees, fillers, devices for maintaining the shape of the shoe.
5. Devices for stretching the shoe at certain places.
6. Pneumatic lasts.
7. Shoemakers' stands. (Cf. 34c, 16.)
8. Shoemakers' knives. (Cf. 69.)
9. Awls. (Manufacture 7e, 2.)
10. Shoe-peg rasps.
11. Miscellaneous shoemakers' tools, exclusive of gr. 7-9, 19, 20, 46, 56, 62.

**CAP PRESSES, SKIVING MACHINES, STRETCHING MACHINES, AND CREASING PRESSES FOR SHOES, ETC. (Gr. 12-15.)**

12. Shoe capping, cap stamps, and presses.
13. Skiving machines (for shoemaking.)
14. Stretching machines for shoemaking. (Leather stretching, 28b, 4.)
15. Creasing presses for shoemaking [for boot legs, etc.].

**LASTING MACHINES. (Gr. 16-29.)**

16. Apparatus for binding the upper upon the last.
17. Machines for preliminary treatment of the upper for the lasting and sewing operations, exclusive of gr. 18.

## 71c—Continued.

18. Machines for automatically pulling over the upper when laid loosely upon the last.
19. Hand lasting and lasting pincers.
20. Elements, especially nailing devices for lasting pincers.
21. Lasting machines with a single lasting gripper.
22. Lasting machines with a plurality of lasting grippers, exclusive of gr. 25-26.
23. Lasting machines with lasting shear levers, exclusive of group 25.
24. Lasting machines with lasting clamps, clamp shoes, wipers, stretching straps, or the like, exclusive of gr. 26.
25. Lasting machines with lasting pincers and shear levers.
26. Lasting machines with lasting pincers and clamps.
27. Wipers, sole pressers, and last supports for supporting the operation of the grippers on lasting and pulling over machines.
28. Last carriers and shoe guides on lasting and pulling over machines.
29. Miscellaneous elements for lasting machines exclusive of gr. 27-28 and 44, especially devices for slitting or grooving the upper.

**MACHINES FOR MAKING WELTS, SOLES, AND HEELS, AND FOR PREPARING THE SAME FOR FASTENING TO THE SHOE, AND MACHINES FOR CARRYING OUT OPERATIONS SUBSEQUENT TO THE LASTING AND SEWING. (Gr. 30-35.)**

30. Shoe-gumming machines, especially devices for gluing together insoles and uppers.
31. Sole and heel stamping and cutting machines and machines for making filling pieces.
32. Machines for stamping out and simultaneously building up the top lift on the heel.
33. Shoe sole presses.
34. Machines for making stitch flaps on shoe soles and for other manipulation of the same preliminary to the fastening operation.
35. Machines for preparing the welt for fastening to the shoe, upper beating machines and machines for carrying out various operations subsequent to the lasting and sewing.

**MACHINES FOR FASTENING WELTS, HEEL PIECES, AND SOLES TO THE SHOE. (Gr. 36-46.) (Sewing machines, 52a, 13-15.)**

36. Machines for fastening the welts, heel pieces, and soles, exclusive of gr. 37-42. (Cf. 71a, 18.)
37. Machines for fastening the soles by means of screws.
38. Shoe-nailing machines for the use of finished nails and the like.
39. Shoe-nailing machines with apparatus for separating the nails from a wire or sheet-metal strip.
40. Shoe-nailing machines for finished wood nails.
41. Shoe-nailing machines with apparatus for separating the nails from a strip of wood.
42. Shoe-nailing machines for nails of various materials.
43. Elements of the nailing apparatus on shoe-nailing machines, especially nail feeding.
44. Nailing apparatus on lasting and pulling-over machines.
45. Miscellaneous elements in shoe-nailing machines, especially driving mechanism for moving the horn and nail-cutting apparatus connected with the horn.
46. Hand-nailing apparatus for shoemaking, exclusive of gr. 20.

## 71c—Continued.

**TURNING MACHINES FOR SHOES AND MACHINES FOR FASTENING THE HEELS. (Gr. 47-49.)**

47. Turning machines.
48. Heel pressing and nailing machines.
49. Heel presses without nailing apparatus.

**MACHINES FOR PERFORMING FURTHER OPERATIONS UPON THE UPPERS, SOLES, AND HEELS. (Gr. 50-57.)**

50. Edge cutters and heel cutters and machines for trimming the rear surfaces of the heels.
51. Sole-forming machines with burnishing rolls.
52. Impression apparatus for shoemaking [indenting seams, etc.].
53. Edge-indenting machines for shoemaking.
54. Machines for trimming and finishing shoes.
55. Machines for driving in heel and sole protectors. (Elements, Gr. 43, 45.)
56. Burnishing tools for shoemaking. (Cf. 67c, 2.)
57. Machines for burnishing soles and heels.

**MACHINES FOR MAKING SHOE APPURTENANCES. (Gr. 58-59.)**

58. Machines for making shoe pulls
59. Machines for making laces.

**MACHINES FOR SETTING EYELETS, BUTTONS, LACING HOOKS, AND ELASTIC GORES IN SHOES. (Gr. 60-63.)**

60. Punching and eyelet setting machines and tools of general application. (Cf. 3c, 10.)
61. Button fasteners (eyelet-button fasteners) of general application. (Cf. 3c, 10.)
62. Machines and tools for setting lacing hooks in shoes.
63. Machines for inserting the elastic gores in shoes.

64. Miscellaneous mechanism, etc., for shoe making, exclusive of gr. 1-63.

**CLASS 72.—FIREARMS, ETC., AMMUNITION AND ARMOR.**

- 72a. Hand Firearms (exclusive of those classified under b and h) and Appurtenances, also Features of General Application to Firearms.

**GUNS OF VARIOUS KINDS, INCLUDING MUSKETS AND CARBINES. (Gr. 1-8.) (Cf. 72b, e. g., gr. 2.)**

1. Guns with a hand grip located under the fore end of the stock.
2. Guns with a hand grip located under the small of the butt.
3. Guns with a trigger-guard cocking lever.
4. Separable guns, gun spades.
5. Adjustable guns, guns with adjustable stocks [try guns], butt caps.
6. Cane guns and gallery rifles.
7. Electric guns.
8. Guns and pistols with cocking triggers.

**PISTOLS AND REVOLVERS. (Gr. 9-11.) (Cf. gr. 8; 72b, 5 and 7.)**

9. Pistols. (Cf. gr. 10; 66a, 2; 72b, 5 and 7.)
10. Revolvers.
11. Revolvers with hinged barrels.



## 72a—Continued.

**BREECH CLOSURES AND APPURTENANCES FOR FIRE-ARMS.** (Gr. 12-19.) (Cf. gr. 31.)

12. Falling block closures for hand firearms.
13. Straight line closures for hand firearms.
14. Bolt closures for hand firearms. (Cf. gr. 15.)
15. Unusual forms of bolt closures for hand firearms. (Cf. gr. 14.)
16. Locks for sporting guns.
17. Cartridge extractors and ejectors for sporting guns.
18. Change-over devices for sporting guns (single trigger, etc., for multiple barrels).
19. Safety features for guns in general.

**CARTRIDGE MAGAZINES FOR HAND FIREARMS.** (Gr. 20-24.)

20. Box magazines. (Cf. gr. 17.)
21. Special box magazines exterior to the cartridge lifter.
22. Stock magazines.
23. Drum magazines.
24. Barrel magazines.

**MISCELLANEOUS MECHANISM FOR HAND FIREARMS, EXCLUSIVE OF CLOSURES AND CARTRIDGE MAGAZINES.** (Gr. 25-29.)

25. Trigger mechanism including thumb triggers.
  26. Means for controlling the trigger action.
  27. Gun barrels and appurtenances (muzzle covers). (Manufacture, 49a, 32.)
  28. Silencers and recoil preventers. (Cf. 14g, 10; 30d, 29; 46c, 29 and 30.)
  29. Miscellaneous mechanism for guns, exclusive of gr. 25-28.
- 
30. Gun supports, shooting rests, shooting stands, etc.
  31. Gun cleaning. (Cartridges with lubricating wads, 72d, 1-6.)
  32. Cutting and thrusting weapons in combination with firearms.
  33. Revolver holsters and detachable stocks for firearms. (Cf. 33b, 2.)

**72b. Parlor Guns, Target Guns, Air Guns, Spring Guns, Toy Guns, Report Producers, Bows and Arrows, Catapults, and Slings.**

1. Blowguns and popguns.
2. Airguns.
3. Bows and crossbows, arrows, and bolts.
4. Spring guns.
5. Report producers, e. g., toy pistols.
6. Catapults, slings, etc., for use as weapons. (Apparatus for throwing balls in games, 77a, 20, 22, 26; catapults and slings, etc., as toys, 77f, 24.)
7. Liquid pistols.

**72c. Ordnance (exclusive of that classified under h), Mounts, Including Armored Carriages and Carriage Shields.**

1. Rammers.
2. Arrangements whereby the embrasure may be made as small as possible.
3. Armored mounts.
4. Disappearing mounts.
5. Mounts for heavy artillery.
6. Wheeled carriages.
7. Wheeled carriages with spades (spring spades).
8. Recoil ordnance and differential recoil ordnance in general.

## 72c—Continued.

9. Brakes for recoil and differential recoil ordnance.
10. Wedge closures for ordnance.
11. Breech screws for ordnance.
12. Screw closures for ordnance.
13. Firing locks for ordnance closures.
14. Ordnance firing apparatus. (Firing apparatus connected with the aiming mechanism, 72f, 15.)
15. Ordnance barrels. (Cf. 49a, 32.)
16. Air and gas cannon.
17. Mitrailleuse guns (revolving guns without a belt).
18. Miscellaneous mechanism in connection with ordnance, exclusive of gr. 1-17.

**72d. Ammunition, e. g., Cartridges and Projectiles, Transportation and Packing of Ammunition, Including Ammunition Hoists, Ammunition Wagons, Pouches and the Like, Cartridge Loading and Unloading Machines.** (Fuses, class 72i.)

1. Cartridges in general. (Cf. gr. 6-7.)
2. Cannon cartridges.
3. Cartridge shells. (Manufacture of cartridge shells, 7c, 28.)
4. Cartridge primers, friction tubes, caps, and the like. (Cf. 78c, 4.)
5. Shotgun ammunition.
6. Blank cartridges, drill cartridges, and projectiles.
7. Cartridges for small loads, practice barrels.
8. Cartridge packing, ammunition cases, and wagons, including armored wagons (for transportation).
9. Ammunition pouches and belts. (Cf. 33b, 2-4; processes of weaving cartridge belts, 86c, 1.)
10. Loading strips, cartridge holders, and belts for machine guns.
11. Circular packages of cartridges for revolvers.
12. Cartridge-loading machines.
13. Implements for working with cartridges and apparatus for setting and extracting caps and the like.
14. Projectile jacketing machines, lacquering and asorting cartridges. (Cf. 49b, 30.)
15. Projectiles for small arms.
16. Ordnance projectiles in general.
17. Grenades, shrapnel, self-igniting projectiles (cf. gr. 18), and case shot.
18. Explosive shells. (Cf. gr. 17.)
19. Rocket projectiles, light projectiles, incendiary shells, e. g., balloon shells, stink pots, and the like.
20. Projectile guides and packing, lubricating wads, and projectiles.
21. Ammunition supply for armored ordnance, ammunition hoists, and the like. (Ammunition supply for warships, 65c, 2; cf. 35a; 81c, 13.)

**72e. Target Stands, Targets, Butts, Bullet Catchers.**

1. Target stands in general, bullet catchers, and shields.
2. Self-indicating targets. (Cf. gr. 3.)
3. Drop targets and bursting targets.
4. Movable targets.
5. Clay pigeons, glass balls, and the like as targets.

**72f. Sighting, Aiming, and Training Apparatus.** (Range finders, class 42c.)

1. Rear and front sights for firearms in general.
2. Vertically and laterally adjustable rear sights. (Sliding leaf and "Bock" sights.)
3. Telescopic and peep sights for small arms. (Cf. 42h, 10.)
4. Pendulum sights.
5. Change-over sights for multiple barrel guns.

## 72f—Continued.

6. Aiming mechanism with illuminated front or rear sights, or with reflectors for illuminating the target.
7. Means for registering the accuracy of aim, etc., apparatus for use in connection with aiming drill, and for testing hand firearms.
8. Training mechanism for firearms comprising clinometer levels.
9. Mirror sighting apparatus for firearms.
10. Elevating gear for field artillery.
11. Elevating gear for siege guns and traversing mechanism for armored turrets.
12. Elevating gear for ordnance, and tangent scales positively connected with the range finder. (Cf. 42c, 21.)
13. Tangent sights for ordnance.
14. Telescopic sights for ordnance.
15. Miscellaneous mechanism for training and aiming heavy guns, exclusive of gr. 1-14. Observation towers for military purposes.
16. Protective casings for sighting mechanism.

## 72g. Armor, Armored Turrets, Armored Vehicles, and Shields.

1. Armored clothing. (Cf. 3b, 4.)
2. Light protective coverings and armored shields. (Cf. 77a, 23.)
3. Heavy armor (armored turrets). (Cf. 72f, 11; armor for warships, 65e, 3.)
4. Armored vehicles and the like. (Ammunition wagons, 72d, 8; protective shields for ordnance, 72c, 6; for ammunition wagons, 72d, 8.)

## 72h. Automatic Hand Firearms, Machine Guns, and Quick Firers.

## AUTOMATIC HAND FIREARMS. (Gr. 1-5.)

1. Automatic firearms in general.
2. Recoil loaders with fixed barrels.
3. Recoil loaders with sliding barrels.
4. Gas pressure loaders (lateral aperture in the barrel).
5. Automatic pistols (Browning's, Luger's, etc.).

## MACHINE GUNS AND QUICK FIRERS. (Gr. 6-10.)

6. Hand-operated machine guns and quick firers (revolver cannon with ammunition belts).
7. Automatic machine guns and quick firers.
8. Maxim guns.
9. Automatic guns of large caliber.
10. Carriages, shoulder pieces, and appurtenances for quick firers.

## 72i. Projectile Fuses.

1. Time and double-acting fuses for projectiles.
2. Time-regulating devices for time fuses (projectile fuses).
3. Percussion fuses for projectiles.
4. Mechanical time and double-acting fuses for projectiles.
5. Protective caps for projectile fuses.

## CLASS 73.—ROPE MAKING.

1. Making ropes, including wire ropes. (Making braided ropes, 25b, 10.)
2. Making cords and laces.
3. Making rope belts.
4. Making ropes of straw and the like.

## 73—Continued.

5. Special ropes. (Cf. 20a, 12 and 13; 21c, 3; 25b, 10; 35a; driving cables, 47d, 10; hoisting cables, 81e, 3.)
6. Machines for covering ropes. (Cf. 21c, 7; 25c, 1.)
7. Machines for polishing and trimming finished ropes.
8. Auxiliary apparatus for rope making, including splicing, and machines for untwisting cords and ropes.

## CLASS 74.—SIGNALING.

## 74a. Signaling Apparatus for House Use, Including Electric and Mechanical Bells, Drop Annunciators, Alarm Clocks and the Like, Fire and Burglar Alarms, Signal Apparatus for Restaurants, Annunciators for House and Hotel Use, Also Apparatus for Ringing Tower Bells.

## SIGNALING FOR HOUSE USE BY MEANS OF ELECTRIC BELLS, INCLUDING SIGNAL APPARATUS FOR RESTAURANTS, HOUSE AND HOTEL ANNUNCIATORS. (Gr. 1-6.) (Cf. gr. 10.)

1. Electric-bell systems and connections, including those with return signals and with automatic connectors and cut-outs.
2. Electric door and table bells.
3. Waterproof electric bells.
4. Electric bells with special forms of signals, e. g., slow ringing, ringing for regulable time, single-stroke bells, bells with different tones, motor bells.
5. Alternating current electric bells.
6. Elements of electric bells, including switching, contacts, and bells, per se. (Cf. gr. 11.)

## SIGNALING FOR HOUSE USE BY MEANS OF MECHANICALLY OPERATED BELLS. (Gr. 7-9.) (Cf. gr. 39.)

7. Mechanical bells in general.
8. Mechanical bells with spring actions or with detent release, e. g., for velocipedes.
9. Mechanical bells with special signals (slow ringing, continuous ringing, ringing for specified time, double stroke).

## OPTICAL SIGNALING FOR HOUSE USE. (Gr. 10-12.)

10. Electrically operated optical signal apparatus for porters, restaurants, railway stations, and the like.
11. Electric drop annunciators and connections therefor.
12. Mechanically operated optical signaling apparatus for restaurants.

## TIME-CONTROLLED ALARMS. (Gr. 13-20.)

13. Electrical alarms controlled from a central station and alarm systems, including those with a return signal.
14. Electric control systems [registering, etc.] with alarm clocks.
15. Electric alarm mechanism. (Cf. gr. 13.)
16. Electric alarm mechanism with special signals (repeating, optional limit of duration).
17. Electric alarm mechanism combined with other apparatus (lights, igniting devices, heating arrangements, memorandum tablets). (Cf. 34l, 6; 83a, 72.)
18. Time-controlled alarm devices for watches.
19. Alarm clocks for factories, schools, and railway stations.
20. Mechanical alarm mechanism for clocks. (Cf. 83a, 64-75.)



## 74a—Continued

ELECTRIC BURGLAR ALARMS. (Gr. 21-26.) (Cf. 68a, 35-37.)

21. Electrical connections for burglar alarms
22. Door and window contacts, cord contacts for burglar alarms. (Cf. 68b, 15.)
23. Vibrating contacts for burglar alarms [operated when shaken]. (Cf. gr. 24.)
24. Contacts on fastenings for burglar alarms. (Cf. gr. 23.)
25. Electric safety appliances for safes and the like, including those with time alarms and those operated by wire gratings and wall contacts
26. Electric safety devices to prevent theft of cycles and other movable articles.

MECHANICAL BURGLAR ALARMS. (Gr. 27-29.)

27. Mechanical burglar alarms in general
28. Pneumatic apparatus for burglar alarms.
29. Detonating burglar alarms. (Cf. 68a, 36.)

FIRE ALARMS. (Gr. 30-38.) (Cf. 61a, 17-18; 74b, 3; 74c, 14-23.)

30. Electrical connections for fire alarms.
31. Fusible contacts for fire alarms.
32. Thermo-pneumatic apparatus, e. g., air thermometers for fire alarms.
33. Fire alarms operated by the gases resulting from combustion.
34. Mercury thermometers for fire alarms.
35. Metal thermometers and cord contacts for fire alarms
36. Fire alarms operated by thermal currents and changes in resistance.
37. Fire alarms for sudden heating and also for moist or dry air.
38. Detonating fire alarms.

39. Apparatus for ringing tower bells. (Cf. gr. 7-9.)

**74b. Telemetric Apparatus for Indicating Various Conditions, as Changes in Water Level, Variations in Temperature and Pressure, Occurrence of Fire Damp, Disturbances in the Operation of Machine Plants, Speed Variations, and Positions of the Compass.**

1. Telemetric apparatus for indicating variations in water level and the movement of currents. (Alarm mechanism for gas conduits, 4c, 14.)
2. Telemetric apparatus for indicating variations in pressure.
3. Telemetric apparatus for indicating temperature variations. (Cf. 74a, 30-38.)
4. Telemetric apparatus for indicating the occurrence of injurious gases, e. g., fire damp.
5. Telemetric apparatus for indicating disturbances in the operation of machine plants.
6. Telemetric apparatus for indicating changes in velocity and in the direction of rotation of machines.
7. Telemetric apparatus for indicating positions of the compass.
8. Miscellaneous telemetric apparatus exclusive of gr. 1-7.

**74c. Order Apparatus, Fire and Police Telegraphs.**

ORDER AND INDICATING APPARATUS. (Gr. 1-13.)

1. Order and indicating apparatus in which the signal is given by incandescent lamps, drop leaves, or bells.

## 74c—Continued.

2. Order and indicating apparatus in which the positioning of a pointer is controlled electrically by means of pawls
3. Order and indicating apparatus in which the positioning of a pointer is controlled electrically by means of circularly arranged magnets or solenoids
4. Order and indicating apparatus of the three-magnet type.
5. Order and indicating apparatus with a variable resistance in the transmitter operating on the principle of a variable potential.
6. Same, operating on the principle of equalization of resistance.
7. Order and indicating apparatus operating on the principle of the rotary field indicator.
8. Order and indicating apparatus depending on the inductive operation of variable magnetic fields upon a movable armature, or operating according to the resonance principle.
9. Order and indicating apparatus in which the positioning of the receiver is accomplished by a motor which is started by the transmitter and is automatically stopped after the positioning is accomplished.
10. Elevator shaft signaling apparatus.
11. Order and indicating apparatus in which the movement is transmitted mechanically.
12. Mechanism for the selective operation of any desired electrical signal device of a group, also machine telegraphs with mechanism for supervising proper execution of the orders transmitted.
13. Separate structural parts for order and indicating apparatus, also auxiliary mechanism, e. g., for registering transmitted signals.

FIRE AND POLICE TELEGRAPHS. (Gr. 14-22.)

14. General arrangement of fire and police telegraphs.
15. Automatic signal transmitters with means for transmitting information (fire alarms, fire telegraphs).
16. Automatic signal transmitters for transmitting several different items of information (police and district telegraphs).
17. Mechanism for receiving signals from a distance and repeating them in the central station.
18. Mechanism for preventing disturbances in the transmission of signals in the case of simultaneous use of several transmitters or upon breakage of the conductor, or the like.
19. Automatic fire alarm systems.
20. Connection of the house fire alarms to the street system.
21. Apparatus related to electric fire alarms, including testing apparatus.
22. Mechanism for selective operation of any desired electric signal device of a group.

23. Nonelectric fire alarms.

**74d. Acoustic and Optical Signals, Exclusive of Those Mentioned Under a-c, e. g., Whistles, Sirens, Fog Horns, and Other Acoustic Signals, Also Apparatus for Determining the Direction and Origin of Signals.**

ACOUSTIC SIGNALS. (Gr. 1-7.)

1. Whistle signals.
2. Sirens.
3. Fog horns.
4. Bell signals.

## 74d—Continued.

5. Signaling by means of distinguishable sounds.
6. Signaling by means of sound waves transmitted under water, and sound indicators (apparatus for determining the direction and origin of the sound signals).
7. Pyrotechnical and detonating signals. (Railway torpedoes, etc., 20i, 43-44.)

## OPTICAL SIGNALS AND THE LIKE. (Gr. 8-11.)

8. Mechanism for signaling by means of light sources. (Cf. 21c, 40.)
9. Signaling devices in connection with lanterns and beacon lights. (Cf. 4a, 47; 20i, 14.)
10. Miscellaneous optical signals, exclusive of light signals, e. g., semaphores. (Cf. 20i.)
11. Luminous inscriptions, especially for advertising. (Cf. 21c, 40; 54g, 9, 12.)

**CLASS 75.—SCULPTURE, PAINTING, SURFACE ORNAMENTATION.**

**75a. Machines and Apparatus for Use in Sculpture, for Locating Points, Modeling, Copying Relief Forms, Engraving, Rose Engine Work and Carving, Embossing Apparatus of General Application; Also Machines for Carrying Out the Processes Mentioned Under b to d.**

**MACHINES AND APPARATUS FOR ORNAMENTING SURFACES. (Gr. 1-5.)**

1. Branding stamps, machines and implements for use in pyrography.
2. Machines and apparatus for embossing, pressing, and the like, of general application.
3. Machines and apparatus for chipping away surfaces.
4. Machines and apparatus for making mosaic and tarsia work.
5. Machines and apparatus for ornamenting surfaces of kinds not specially mentioned.

**ENGRAVING MACHINES, I. E., MACHINES AND APPARATUS IN WHICH THE TOOL IS MOVABLE GENERALLY ONLY IN A DIRECT LINE IN THE DIRECTION OF THE DEPTH OF THE WORK. (Gr. 6-12.)**

6. Engraving machines in general.
7. Electrically operated machines and apparatus for engraving.
8. Machines and apparatus for engraving rotary bodies.
9. Machines and apparatus for engraving fluted rollers.
10. Machines and apparatus for engraving straight and parallel lines upon surfaces. (Cf. 42a, 19.)
11. Machines and apparatus for rose engine work. (Cf. 42a, 14.)
12. Elements of engraving machines.

**COPYING MACHINES. (Gr. 13-15.)**

13. Copying machines and apparatus in which the work or the tool has free movement in space. (Sculpturing machines.)
14. Copying lathes.
15. Copying machines for special purposes, e. g., for working upon edge surfaces.

**MACHINES AND APPARATUS FOR PROPERLY FIXING RELIEF FORMS. (Gr. 16-18.)**

16. Machines and apparatus for locating points in sculpture.
17. Conforinators.
18. Apparatus for reproducing (modeling).

## 75a—Continued.

**MACHINES FOR PAINTING. (Gr. 19-22.) (Cf. related processes, 75c.)**

19. Machines and apparatus for preparing the surfaces for the reception of colors and coatings.
20. Machines and apparatus for the direct application of colors and coatings (painting machines).
21. Machines and apparatus for applying colors and coatings by dipping.
22. Machines and apparatus for applying colors and coatings by dusting or spraying.

23. Machines and apparatus for producing special ornamental objects and designs. (Cf. related processes, 75b and d.)

**75b. General Processes of Decorating and Molding, Including Mosaic and Tarsia Work.****SURFACE ORNAMENTATION. (Gr. 1-14.) (Cf. 22g, 12.)**

1. Producing designs by local changes in the surface material, e. g., by pyrography and the like.
2. Producing designs by local deposits upon the surface, e. g., by electrolysis or the like.
3. Producing designs by applying granular substances to a surface, as powdered glass, tinsel, and the like. (Cf. 15k, 5; 75c, 4.)
4. Producing designs by applying fibrous substances to the surface, e. g., flocking and the like. (Cf. 15k, 5; 75c, 4.)
5. Producing designs by applying flat materials, as small sheets, pieces of fabric, and the like to surfaces. (Cf. 15k, 5; 75c, 4.)
6. Ornamentation by applying pictures, especially transfer pictures, to a surface. (Making transfer pictures by printing, 15k, 8-9; by painting, 75c, 5.)
7. Ornamentation by applying ornamental relief forms, as flowers, or the like, to the surface.
8. Ornamentation by applying a plastic mass to the surface and molding the mass. (Cf. gr. 16.)
9. Ornamentation by applying to the surface objects molded in plastic materials. (Cf. gr. 17.)
10. Producing designs by local removal of material from a surface, e. g., by engraving, etching, and the like. (Cf. gr. 18 and 20; 15b, 1.)
11. Producing designs by local embossing, imprinting, and the like, of ornamental forms in the surface. (Cf. gr. 19; 15k, 6.)
12. Producing designs by embedding ornamental forms in the material of the backing (inlaying processes of all kinds, e. g., niello work, tarsia work and the like). (Making ornamental plates with a design extending entirely through, gr. 20.)
13. Ornamentation by putting together ornamental parts upon a background, including mosaics of all kinds. (Making mosaic plates in which the design extends entirely through, gr. 21.)
14. Ornamentation of kinds not especially mentioned, exclusive of gr. 1-13.

**THE PRODUCTION OF INDEPENDENT ORNAMENTAL FORMS. (Gr. 15-22.)**

15. Making relief forms by building them up of layers, as with relief cards. (Photo sculpture, 52b, 19.)
16. Making relief forms by free modeling in plastic materials. (Cf. gr. 8.)
17. Making relief forms by molding from the originals in plastic materials, e. g., clay casts, and the like. (Cf. gr. 9.)



## 75b—Continued.

18. Making relief forms by removal of material from a body (sculpture proper). (Cf. gr. 10.)
19. Making relief forms by embossing, pressing, bending, and the like. (Cf. gr. 11; 15k, 6.)
20. Making and filling in of apertures through a body, e. g., scroll work, tarsia plates, and the like. (Cf. gr. 21.)
21. Free assembling of ornamental forms from separate parts, e. g., mosaic plates of all kinds. (Cf. gr. 20.)
22. Producing independent ornamental forms in ways not specially mentioned, exclusive of gr. 15-21.

## ORNAMENTAL OBJECTS. (Gr. 23-29.)

23. Special kinds of picture mountings.
24. Ornamental plates, e. g., wall tiles, veneers, and the like. (Cf. 37b, 2; 80b, 23.)
25. Ornamental cards and the like.
26. Plastic ornaments (stucco plates, photomechanical ornamental plates, and the like).
27. Ornamental figures, letters, and the like.
28. Natural ornaments and imitations of the same. (Cf. 3e, 1.)
29. Ornamental objects not specially mentioned, exclusive of gr. 23-28.

## 75c. Painting, Including Processes, Grounds, Painters' Appliances, Gilding of Moldings, Processes of Lacquering Wood, etc.

## PAINTING PROCESSES. (Gr. 1-5.)

1. Color treatment by direct application of colors, e. g., oil painting, water color, and the like.
2. Color treatment by bringing out colors upon a temporary ground, e. g., processes of marbling and the like with floated colors.
3. Color treatment by the application of colors in the form of dust or spray, e. g., spatter work, bronzing, and the like.
4. Color treatment by application of leaf, e. g., of metal leaf and the like; gilding of moldings. (Cf. 55f, 13.)
5. Color treatment in ways not specially mentioned, exclusive of gr. 1-4, also processes of polishing, lacquering of wood, and the like, and processes in general of applying coatings; coloring flowers by permitting them to absorb dyestuffs. (Cf. 22g; 38c.)

## PROCESSES FOR PRODUCING DRAWINGS OR DESIGNS. (Gr. 6-9.)

6. Producing designs by direct application of color (ordinary drawing processes).
7. Producing designs by the application of color over a masked ground, e. g., stenciling processes. (Cf. gr. 25.)
8. Producing designs by local removal of applied colors, e. g., by scraping, engraving, and the like.
9. Producing designs in ways not specially mentioned (exclusive of gr. 6-8).

## 10. Grounds of all kinds for painting and drawing.

## IMPLEMENTS FOR THE PRELIMINARY TREATMENT OF PAINTERS' COLORS. (Gr. 11-14.)

11. Color charts and the like. (Cf. 42h, 18.)
12. Color grinders. (Cf. 22g, 15.)

## 75c—Continued.

13. Color mixers and stirrers.
14. Palettes.

## IMPLEMENTS FOR STORING COLORS. (Gr. 15-16.)

15. Color receptacles.
16. Paint boxes.

## IMPLEMENTS FOR PRELIMINARY TREATMENT OF SURFACES FOR PAINTING. (Gr. 17-19.)

17. Implements for cleaning surfaces for painting.
18. Stretching frames for canvas and the like.
19. Other holding apparatus for articles to be painted.

## IMPLEMENTS FOR APPLYING COLORS, ALSO FOR THE APPLICATION OF COATINGS IN GENERAL. (Gr. 20-23.)

20. Implements for the direct application of colors, painting appliances, painting implements, and the like (brushes, class 9), also implements for the application of material in general.
21. Implements for dipping into colors or other materials. (Cf. 8a, 3-5.)
22. Implements for the application of colors in the form of powder, spray, and the like. (Cf. 8a, 1, 2.)
23. Implements for the application of leaf and the like, e. g., metal leaf. (Cf. 11c, 4, 5; 55f, 13; 81c, 27.)

## IMPLEMENTS FOR PRODUCING DESIGNS IN CONNECTION WITH PAINTING PROCESSES. (Gr. 24-27.) (Cf. 70a, e.)

24. Implements for the direct application of color. (Cf. 70a, e.)
25. Implements for applying color over a masked ground, e. g., stenciling (cf. gr. 7), also manufacture of paper stencils.
26. Implements for the local removal of applied colors.
27. Implements not elsewhere mentioned for producing designs, pricked pattern perforators.

## 28. Auxiliary appliances for painting, exclusive of gr. 1-27.

## 75d. Special Designs and Pictures, e. g., Comic, Magic, and Secret Pictures, Diaphanous Pictures, Glass Painting. (See also class 32b.)

## PICTURES AND DESIGNS DISTINGUISHED BY LIGHT EFFECTS. (Gr. 1-4.)

1. Pictures and designs to be viewed by reflected light (matte and polish effects). (Cf. gr. 12 and 75b, 1.)
2. Pictures and designs to be viewed by transmitted light (transparencies, stained glass imitations, and the like). (Cf. 75b, 6.)
3. Pictures and designs to be viewed by light reflected from the rear surface, e. g., pictures with mirror backings.
4. Pictures and designs with light effects not elsewhere mentioned.

## PICTURES AND DESIGNS DISTINGUISHED BY COLOR EFFECTS. (Gr. 5-7.)

5. Changeable, comic, and secret pictures and the like, also bank notes, etc. (Cf. 15k, 9.)
6. Pictures and designs with iridescent effects. (Cf. gr. 19.)
7. Pictures and designs with color effects not elsewhere mentioned.

## 75d—Continued.

## DESIGNS DISTINGUISHED BY CONTOUR EFFECTS. (Gr. 8-10.)

8. Line designs, e. g., checkered figures.
9. Symmetrical, repeated, and composite designs.
10. Contour designs not elsewhere mentioned.

## DESIGNS DISTINGUISHED BY THE CHARACTER OF THE SURFACE. (Gr. 11-13.)

11. Washed-out designs, mottled and clouded designs.
12. Designs with local mirror effects. (Cf. gr. 1.)
13. Designs with surface modifications not elsewhere mentioned.

## IMITATING AND PRODUCING RELIEF EFFECTS. (Gr. 14-15.)

14. Imitating relief effects by corresponding color, e. g., by painting, printing, and the like.
15. Producing relief effects by other means than application of color.

## IMITATIONS OF NATURAL DESIGNS. (Gr. 16-22.) (Imitations of natural ornamental objects, 75b, 28.)

16. Wood designs. (Apparatus for applying color for graining, 75c, 20.)
17. Stone designs.
18. Horn, ivory, and meerschaum designs, and the like.
19. Crystal, pearl, and mother-of-pearl designs and the like. (Cf. gr. 6.)
20. Metallic and metal oxide designs and the like.
21. Leather and fabric designs and the like, including lace designs.
22. Natural designs not elsewhere mentioned.

## IMITATION OF ARTIFICIAL DESIGNS. (Gr. 23-26.) (Imitations of natural ornamental objects, 75b, 28.)

23. Imitations of paintings.
24. Imitations of mosaics and tarsia work. (Cf. 75b, 12, 13, 20, 21.)
25. Imitation of ceramic designs. (Cf. 75b, 24.)
26. Artificial designs not elsewhere mentioned.

## CLASS 76.—SPINNING.

## 76a. Wool Washing.

1. Cylindrical wool-washing machines.
2. Longitudinal-travel wool-washing machines.
3. Arrangements for the chemical purification of wool. (Cf. 8a, 3, 5, 7, 17-19.)
4. Elements in the wool-washing art. (Cf. gr. 1-3.)

## 76b. Preliminary Treatment of the Textile Fibers. (Hackling machines, class 29a.)

## DUSTERS AND BEATERS FOR TEXTILE FIBERS. (Gr. 1-5.)

1. Rag dusters, rag cutters, waste cleaners for fabric waste. (Cf. 55a, 7.)
2. Openers (drum, beater, vane, disk).
3. Scutching machines for textile fibers. "Express-karden."
4. Burring machines and lick-inners for textile fibers.
5. Card willowers for textile fibers.

6. Oiling and loading textile fibers.
7. Feeding apparatus for textile fibers; spreaders.

## 76b—Continued.

## CARDS AND APPURTENANCES. (Gr. 8-19.)

8. Cards of special kinds.
9. Cylinder cards.
10. Revolving flat cards.
11. Spinning cards [for carding and spinning]
12. Fancy cards (for variegated yarn, etc.).
13. Fleece and sliver distributors for cards.
14. Fleece winders and separators for cards.
15. Card clothing, teeth, fillets, fastening means. (Manufacture, 7d, 9; hardening, 18c.)
16. Card cleaners and card cleaning, also card grinding on the machine. (Cf. 67a, 30.)
17. Fancy-roller covers and other covers for cards
18. Driving and stop mechanism for cards.
19. Card elements, exclusive of gr. 13-18, 21-23.

## 20. Cans and coilers.

## FLEECE DIVIDERS. (Gr. 21-25)

21. Fleece dividers in general for carding.
22. Steel band fleece dividers.
23. Strap fleece dividers.
24. Condensers and trumpets for fleece dividers and drawing frames.
25. Elements of fleece dividers, exclusive of gr. 21-24, e. g., roving rollers.

## DRAWING FRAMES. (Gr. 26-29.)

26. Gill box drawing for wool and cotton.
27. Roller and porcupine roller drawing for wool and cotton.
28. Drawing frames for flax, hemp, etc.
29. Elements of the drawing mechanism mentioned under gr. 26-28, weight bars, saddles, presser rolls, top rolls and their manufacture, also calendering.

## COMBS. (Gr. 30-34.)

30. Combs (Heilmann type).
31. Circular combs (Noble type, etc.)
32. Combs with a plurality of heads.
33. Combs of special varieties, exclusive of gr. 30-32.
34. Details of combs.

35. Cleaning cards, combs, and the like.
36. Conveying apparatus and means for disposing of the waste in connection with cards, beaters, etc. (dust trunks, grids, and the like).
37. Manufacture of yarn from special fibers, e. g., peat and roving products.

## 76c. Spinning and Twisting.

## FLY-SPINNING MACHINES. (Gr. 1-3.)

1. Roving frames.
2. Fly spinning and twisting machines in general.
3. Flyers.
4. Doubling and twisting spindles.

## RING SPINNING AND TWISTING FRAMES. (Gr. 5-6.)

5. Ring spinning and twisting frames in general.
6. Rings and travelers, traveler receptacles.



## 76c—Continued.

**MISCELLANEOUS SPINNING AND TWISTING FRAMES, EXCLUSIVE OF GROUPS 1-6. (Gr. 7-9.)**

7. Spinning frames for carded yarn (trumpets and twisting heads).
8. Cap spinning machines.
9. Spinning and twisting frames for fancy yarn.

**DETAILS OF FLY FRAMES AND RING SPINNING FRAMES. (Gr. 10-19.)**

10. Thread guides and clearers.
11. Thread catchers and protectors.
12. Drawing mechanism for spinning frames.
13. Driving apparatus, spindle drive, and spindle belts.
14. Spindle brakes.
15. Bobbin brakes.
16. Winding apparatus and controllers for spinning and twisting frames.
17. Stop mechanism for spinning and twisting frames operating upon breakage of the thread.
18. Stop mechanism for doubling and twisting spindles operating upon breakage of the thread.
19. Tension regulators for supply spools.

**SELF-ACTING MULES. (Gr. 20-23.)**

20. Self-acting mules in general.
21. Thread catchers and breakers for self-acting mules.
22. Winding apparatus, and details, exclusive of gr. 21 and 23.
23. Winding governors for self-acting mules.

24. Miscellaneous spinning frames, exclusive of gr. 1-23.
25. Spindles, spindle bearings and spindle lubrication.
26. Doffing and replacing apparatus for bobbins on spinning and twisting frames.
27. Wetting [wet spinning], impregnating in connection with spinning. (Cf. 8b, 13; 76d, 19.)
28. Silk spinning.
29. Paper spinning and the like. (Cf. 55d.)
30. Miscellaneous mechanism for spinning and twisting exclusive of gr. 1-31, e. g., spool holders, cleaning and disposal of waste.
31. Varieties of yarn.

**76d. Winding, Making Up, and Packing of Yarns.****SPOOLING MACHINES IN GENERAL. (Gr. 1-5.)**

1. Disk-spooling machines.
2. Cross-winding spool machines.
3. Cone-winding machines.
4. Cop-winding machines (guide cones and trumpets).
5. Automatic spooling machines.

**DETAILS OF SPOOLING MACHINES. (Gr. 6-10.)**

6. Thread guiding in connection with spooling machines.
7. Thread tensioning and governing mechanism for spooling machines. (Cf. 76c, 19.)
8. Throw-off mechanism for the spools operating in case of breakage of the thread, knotting, tangling, etc. (Cf. 76c, 17-18.)
9. Throw-off mechanism for spooling machines operating when the spools are full. (Cf. gr. 8.)
10. Throw-off mechanism for spindles of spooling machines. (Cf. gr. 8.)

**SPECIAL YARN-WINDING MACHINES. (Gr. 11-12.)**

11. Machines for winding on star-shaped holders.
12. Ball-winding machines.

## 76d—Continued.

**YARN REELS. (Gr. 13-15.)**

13. Yarn reels [for winding skeins].
  14. Yarn reels [for unwinding skeins].
  15. Skein-binding devices for yarn reels.
16. Spools and cop tubes for spooling and spinning machines. (Manufacture of spools from paper, 54c, 4.)
  17. Spool-holding devices.
  18. Measuring apparatus on spooling machines and reels.
  19. Finishing and cleaning yarn upon the spooling machines. (Cf. 8a, b; 76c, 10 and 27.)
  20. Miscellaneous mechanism for winding, making up, skeining, and packing yarn. (Cf. 8f.)

**CLASS 77.—SPORT, GAMES, TOYS, PUBLIC AMUSEMENTS, AERONAUTICS.**

- 77a. Appliances for Athletics, Including Gymnasium Work** (see also class 30f), **Swimming, e. g., Swimming Boots, and the Like, Climbing, Fencing, e. g., Masks, Gloves and the Like** (for Weapons, see class 69), **Ball Games and the Like, Training Apparatus** (see also class 63f), etc.

**GYMNASIUM APPLIANCES. (Gr. 1-11.)**

1. Horizontal bars and analogous appliances.
2. Parallel bars.
3. Appliances for jumping (jumping stands, tapes, skipping ropes, springboards, hurdles).
4. Gymnasium appliances of the German type, ladders, combined apparatus, safety apparatus for gymnasts.
5. Dumb-bells. (Cf. 42k, 6.)
6. Clubs.
7. Gymnasium appliances of the English type [resistance apparatus], and muscle exercising devices, elastic cords and extensible bars. (Cf. 42k, 6.)
8. Exercising apparatus for turning, striking, riding, and the like, also hand exercising apparatus. (Cf. 42k, 6.)
9. Appliances for exercising the legs and feet. (Cf. gr. 12-13; 30f, 4; 42k, 6.)
10. Rowing machines.
11. Striking balls [punching bags, etc.].

**APPLIANCES FOR CLIMBING AND THE LIKE. (Gr. 12-13.) (Cf. gr. 9.)**

12. Stilts, apparatus for facilitating movement, rocker shoes, and similar appliances.
13. Pole climbers, scaling ladders. (Cf. gr. 4, 341, 23; 61a, 1, 3-5; 65a, 32), climbing boots and the like. (Cf. gr. 9; 71b, 13.)

**SWIMMING APPLIANCES. (Gr. 14-15.) (Cf. 65a, 66-69.)**

14. Swimming boots, swimming gloves, and other attachable swimming appliances.
15. Swimming frames and apparatus for teaching swimming.

**ATHLETIC GAMES, E. G., BALL GAMES AND APPURTENANCES. (Gr. 16-26.)**

16. Balls for golf, cricket, croquet, tennis, and like games, also appliances for the manufacture of same.

## 77a—Continued.

17. Devices for picking up tennis and ping-pong balls.
18. Footballs.
19. Rubber balls and the like. (Cf. 39a, 10, 19.)
20. Racquets.
21. Golf clubs, golf bags, and the like.
22. Tennis nets and the like, partitions, fastenings for boundary marks and net posts, also appurtenances for cricket, tennis, and the like, exclusive of gr. 16 to 21.
23. Protective devices for fencers and players (fencing shields for legs, breast, etc., also fencing masks and gloves). (Cf. 72g, 2.)
24. Game-indicating apparatus.
25. Laying out playgrounds. (Cf. 19c.)
26. Miscellaneous sports and athletic games, exclusive of gr. 16–19, e. g., diabolo, and physically beneficial indoor games modeled after outdoor sports, apparatus for throwing and catching balls. (Cf. 72b, 6.)
27. Training apparatus.

## 77b. Skates, Snowshoes and Water Shoes, Roller and Wheel Skates, Rinks, etc. (Paving, class 19c.)

## ICE SKATES AND APPURTENANCES. (Gr. 1–14.)

1. Skates with parallel clamping bars.
2. Skates with simultaneously applied sole and heel clamps.
3. Skates with clamps which are applied by the movement of the foot.
4. Skates with clamps which are applied by a lateral rotation or shifting of the runner.
5. Skates with spring-actuated clamps.
6. Skate fastening by means of metal parts on the shoe.
7. Spring foot plates for skates.
8. Divided foot plates for adjustment to the length of the foot.
9. Sectional or multiple runners, also auxiliary runners.
10. Special arrangements of the single runner.
11. Strap skates [toe straps].
12. Miscellaneous skates, exclusive of gr. 1–11, including collapsible skates.
13. Manufacture of skates. (Cf. 7c, 47; 7f, 10; 49g, 10.)
14. Ankle supports, stands for putting on skates, supporting frames for skaters (beginners), and the like.

## SNOWSHOES AND WATER SHOES. (Gr. 15–16.)

15. Snowshoes, ski staffs, apparatus for facilitating climbing on skis.
16. Water shoes.

## ROLLER AND WHEEL SKATES. (Gr. 17–19.) (Cf. gr. 14.)

17. Ordinary roller and wheel skates.
18. Roller and wheel skates with propelling mechanism.
19. Roller skates with brakes and means to prevent backward movement, with special roller surfaces, e. g., endless belts, and roller skates convertible into ice skates.

20. Rinks and courses. (Cf. 17b, 5; 19c.)

## 77c. Bowling Alleys, Bagatelle and Similar Games, Billiards and Appurtenances.

## BOWLING ALLEYS, BAGATELLE AND SIMILAR GAMES. (Gr. 1–7.)

1. Bowling alleys and appurtenances of various kinds.
2. Table alleys.
3. Apparatus for bowling alleys for setting up pins and returning the balls.
4. Means for indicating the fallen pins.
5. Pins.
6. Balls. (Cf. gr. 15.)
7. Bagatelle and similar games.

## BILLIARDS AND APPURTENANCES. (Gr. 8–16.)

8. Billiards, miscellaneous.
9. Billiard tables convertible into dining tables.
10. Cushions, and fastenings for the same.
11. Cues.
12. Cue tip fastenings.
13. Means for roughening the cue tip and miscellaneous apparatus for working, supporting, and hanging billiard cues, and for working upon tips.
14. Chalk holders.
15. Billiard balls.
16. Billiard registering apparatus. (Cf. 42p; 43a, 37.)

## 77d. Games of Various Kinds, Including Card Games, Board Games, Lotteries, Dice, Roulette, Games of Patience and Endurance, Horse-Race Games, etc.

## CARD GAMES. (Gr. 1–6.)

1. Card presses and card holders.
2. Card shufflers.
3. Card dealers.
4. Card-dealer indicators.
5. Score computers and indicators. (Cf. 43a, 38.)
6. Card game appurtenances, exclusive of gr. 1–5, card tables, boards, etc.

## BOARD GAMES. (Gr. 7–9.)

7. Chess and similar board games.
8. Games of war.
9. Geographical games and the like, and other educational games.

## MISCELLANEOUS GAMES, SUCH AS DICE, TOP GAMES, BUSY WORK GAMES, AND THE LIKE. (Gr. 10–19.)

10. Games of chance and similar games for companies, including lottery games.
11. Dice.
12. Roulette.
13. Games of patience [puzzles, jackstraws, etc.].
14. Busy work games [to keep children busy].
15. Racing games.
16. Top games, dice tops, etc.
17. Dial games.
18. Question-and-answer games and oracle games.
19. Dominoes.

## 77e. Roundabouts, Swings, Rocking Horses, Chutes and Similar Devices for Public Amusement. (Strength testers, class 42k.)

## ROUNDAABOUTS. (Gr. 1–10.)

1. Roundabouts with seats carried on the frame or running on wheels.
2. Roundabouts with bicycles or the like.
3. Roundabouts with suspended seats.



## 77e—Continued.

4. Water roundabouts.
5. Roundabout seats with special movements.
6. Roundabouts with rocking turntables.
7. Roundabouts with spirally moved turntables.
8. Roundabouts with a plurality of concentric turntables.
9. Roundabouts in which the seats have a planetary movement.
10. Roundabouts in which the seats are moved on an undulating track.

## SWINGS, ETC. (Gr. 11-12.)

11. Suspended swings.
12. Seesaws, tipping and cradle swings, also roller swings and "Hexenschaukeln."

## ROCKING HORSES AND OTHER TOY ANIMALS FOR RIDING. (Gr. 13-15.)

13. Rocking horses and hobbyhorses. (Cf. gr. 14.)
14. Rocking horses which are made to travel by rocking. (Cf. gr. 15.)
15. Miscellaneous toy animals for riding which are made to travel by the rider, exclusive of gr. 14.

## CHUTES, SLIDES, AND SIMILAR APPARATUS FOR PUBLIC AMUSEMENT. (Gr. 16-18.)

16. Chutes, etc., and similar pleasure railways.
17. Swinging boats, and roundabouts comprising same.
18. Miscellaneous public amusement apparatus, exclusive of gr. 16-17, including courses for teaching bicycle riding.

## 77f. Toys, Including Tops, Musical Toys, Dolls, Movable Figures and Vehicles, Hoops, Building Blocks, etc. (rubber balls under a), Cotillion Favors, and the Like.

## TOPS AND THE LIKE. (Gr. 1-4.)

1. Tops in general, exclusive of gr. 2-4, also air-propeller tops. (Cf. 77h, 6.)
2. Tops comprising winding devices. (Cf. gr. 3.)
3. Winding devices for tops not combined with the top (Cf. gr. 2.)
4. Musical and color tops.

## MUSICAL TOYS. (Gr. 5-6.) (Cf. gr. 4; 51c, 26; 51d, 23, etc.)

5. Musical toys proper.
6. Toys which produce tones or noises.

## DOLLS. (Gr. 7-12.) (Cf. gr. 13.)

7. Dolls in general.
8. Paper dolls.
9. Connections for the limbs of dolls, rotary heads.
10. Walking, crying, and rolling mechanism for dolls, also doll stands.
11. Eyes, eyelids, and eyelashes for dolls.
12. Processes and compositions for making dolls and doll parts. (Making dolls from plastic materials, e. g., celluloid or papier mâché. 39a, 22.)

## MOVABLE TOY FIGURES AND VEHICLES, ALSO TOY MACHINES. (Gr. 13-21.)

13. Climbing dolls and the like.
14. Figures with walking, rolling, hopping, and similar movements.

## 77i—Continued.

15. Toys with mechanically moved jointed figures, including those moved by clockwork.
16. Toy vehicles, reversing mechanism for the same, etc.
17. Toy machines with various kinds of driving mechanism (steam, gas, electric, etc.).
18. Slide valve control for toy engines (steam or gas).
19. Appurtenances for toy machines, e. g., rails for toy railways, water gauges, and the like.
20. Rowing toys.
21. Diving, swimming, and other water toys.

## MISCELLANEOUS TOYS, EXCLUSIVE OF GROUPS 1-21. (Gr. 22-30.)

22. Toy hoops.
23. Building blocks and similar building toys.
24. Hurling and slinging toys, toy guns, and the like. (Cf. 77a, 26.)
25. Toy parachutes. (Parachutes for aeronauts, 77h, 4.)
26. Optical and color toys, including shadow toys and automatic figures which write or draw.
27. Magnetic and electric toys.
28. Toys for blowing, wind and air pressure toys, toy balloons, and toy flying machines.
29. Soap-bubble toys and smoke toys. (Blowing smoke rings, 44b, 11.)
30. Miscellaneous toys, exclusive of gr. 1-29.
31. Cotillion favors, cracker bonbons, and the like.

## 77g. Apparatus for Theaters, Panoramas and Circuses (buildings, class 37f), Magicians' Appliances, Labyrinths, and the Like.

1. Theater-stage equipment, movable scenes, curtains and other decorations and auxiliary means for moving same, auxiliary stages and scenic effects. (Cf. 37f, 1.)
2. Lighting, projected decorative effects, and the like for theaters. (Stage lighting, 4b, 22.)
3. Apparatus for raising and lowering persons on theater stages (exclusive of stage trapdoors, 37f, 1).
4. Panoramas, dioramas, "stereoramas," and the like.
5. Apparatus for circuses. (Buildings, 37f, 1.)
6. Magicians' appliances and auxiliary apparatus for acrobats.
7. Centrifugal tracks, loop-the-loops, and the like. (Cf. 77b, 16, 18.)
8. Labyrinths.
9. Peep shows, kaleidoscope exhibitions, and the like. (Kaleidoscopes, 42h, 24.)
10. Miscellaneous apparatus for public entertainments, exclusive of gr. 1-9. (Cf. 43b, 40-41; 54g, 13-22.)

## 77h. Aeronautics, Including Kites.

## AIRSHIPS AND FREE BALLOONS. (Gr. 1-4.)

1. Balloons without propelling mechanism (captive balloons and free balloons).
2. Airships (motor balloons, dirigible balloons), inflated airships [without rigid frames], rigid-frame airships, anchored airships (balloon roads), passenger kites.
3. Balloon filling (balloon gas and filling apparatus, vacuum balloons, balloons with heated supporting gases, balloons with air bladders).
4. Balloon envelopes and forms (screw balloons, parachutes, balloon valves, and emptying apparatus). (Toy parachutes, 77f, 25.)

## 77h—Continued.

## FLYING MACHINES. (Gr. 5-9.)

5. Kite-shaped flyers (kites, Gr. 14), control mechanism (horizontal, vertical, and balancing rudders), and mechanism for maintaining equilibrium.
6. Helicopters, including those which are anchored, also special arrangements of propellers for flying machines. (Cf. 77f, 1.)
7. Gliders, body-attached flyers, and planes.
8. Various kinds of flying machines, exclusive of gr. 5-7 (undulatory flyers, paddle-wheel flyers).
9. Launching apparatus for flying machines and mechanism for learning how to fly.

## SPECIAL PROPELLING APPARATUS FOR AIR VEHICLES OF ALL KINDS. (Gr. 10-13.)

10. Beating wings for flying apparatus. (Cf. gr. 7 and 11.)
11. Feathering paddle wheels for flying apparatus.
12. Propulsion of flying apparatus by reaction, e. g., by means of compressed air, explosives, or projectiles.
13. Miscellaneous forms of propulsion for flying apparatus, exclusive of gr. 10-12. (Cf. gr. 8.)
14. Kites. (Kite-shaped flyers, gr. 5.)
15. Miscellaneous apparatus for aeronauts, exclusive of gr. 1-14, airship appurtenances, such as rudders, damping surfaces, etc., mechanism for maintaining equilibrium in airships (for flying machines, gr. 5), apparatus for mounting, landing, and housing airships (for flying machines, gr. 9; hangars, 37f, 8), airship equipment, such as ballast, anchors, dragropes, etc., apparatus for throwing projectiles.

## CLASS 78.—EXPLOSIVES, BLASTING, MANUFACTURE OF MATCHES AND THE LIKE.

## 78a. Manufacture of Matches, Mechanical Features.

1. Cutting and framing match splints. (Cf. gr. 2; 38i, 3.)
2. Framing match splints. (Cf. gr. 1.)
3. Dipping, paraffining, and drying matches. (Cf. gr. 4.)
4. Dipping frames. (Cf. gr. 3.)
5. Conveyer chains and guide bars.
6. Discharging.
7. Match box filling. (Cf. 81a, packing machines.)
8. Manufacture of matches in continuous operation.
9. Matches, match blocks, match strips, also peculiar processes for the manufacture of matches.
10. Wax matches.
11. Printing and stamping matches.
12. Miscellaneous features in the manufacture of matches, e. g., applying friction materials to boxes, manufacture of cigar lighters, etc.

## 78b. Manufacture of Matches, Chemical Features.

1. Wood sliver for matches and substitutes for the same, also chemical treatment of the sliver (dyeing and impregnating) before and after dipping. (Mechanical features, 38i, 3; 78a, 1.)
2. Match compositions.
3. Friction compositions for matches. (Mechanical friction surfaces, 44b, 28.)
4. Headless matches.

## 78c. Manufacture of Gunpowder and Other Explosives, Also Preliminary Treatment of the Raw Materials.

1. Black powder and analogous mixtures.
2. Processes in the manufacture of black powder (granulating, pressing, polishing, drying, and the like).
3. Nitrating glycerine.
4. Nitroglycerine explosives. (Cf. gr. 9, 11.)
5. Preliminary treatment of cellulose and other carbohydrates for the manufacture of explosives.
6. Nitrating cellulose and other carbohydrates.
7. Treatment of the waste acids from the manufacture of explosives.
8. Coating nitrocellulose explosives.
9. Explosives comprising nitrocellulose or other cellulose esters, or other nitrocarbohydrates, mixed with nitroglycerine or other nitrogen carriers or the like.
10. Explosives comprising nitrocellulose or other cellulose esters or other nitrocarbohydrates, without the addition of other important components.
11. Gelatinizing nitrocellulose.
12. Stabilizing nitrocellulose.
13. Explosives derived from picric acid or other nitrophenols.
14. Explosives derived from nitrohydrocarbons and the like, aromatic amines and similar compounds.
15. Explosives derived from chlorates and perchlorates.
16. Explosives of the Sprengel type. (Nitrated hydrocarbons, generally prepared where used.)
17. Ammonium nitrate explosives

## 78d. Pyrotechnic Compositions, Smoke-Evolving Mixtures, Flash Lights.

1. Pyrotechnic compositions and bodies, illuminating compositions, smoke-evolving mixtures, flash-light powders.
2. Flash-light lamps.
3. Igniting devices for flash-light lamps. (Cf. 78c, 4; 78f.)

## 78e. Blasting, Including Fuses (ammunition fuses, class 72i), Percussion Caps, Quick Matches, and Blasting Cartridges.

1. Blasting processes; also the thawing of explosives.
2. Fuses and compositions for caps, blasting caps and fuses. (Cf. 72d, 4.)
3. Electric devices for firing explosives.
4. Quick matches and nonelectric firing devices. (Cf. 78d, 3.)
5. Blasting cartridges.

## 78f. Chemical and Pneumatic Lighters (see also class 44b), Including Chemical Lighting Strips, Fulminating Metals, and Alloys.

## CLASS 79.—TOBACCO, CIGARS, CIGARETTES.

## 79a. Raw Tobacco, Also Smoking Tobacco, Chewing Tobacco, and Snuff, Mechanical Features.

1. Packing and pressing tobacco.
2. Converting raw tobacco into smoking tobacco, e. g., stringing tobacco leaves, mixing and screening tobacco (mechanical features).
3. Stripping tobacco, tobacco flattening machines; stem tobacco. (Cf. 8d, 20.)
4. Tobacco-cutting machines.
5. Tobacco moistening.
6. Tobacco-twisting machines.
7. Chewing tobacco and snuff (mechanical features).



**79b. Cigars and Cigarettes, Mechanical Features, Also the Manufacture of Cigarette Covers and Mouthpieces.**

**APPARATUS AND MACHINES FOR THE MANUFACTURE OF CIGARS. (Gr. 1-9.) (Varieties of cigars, gr. 18-24.)**

1. Manufacture of cigar fillers.
2. Filler molds for cigars.
3. Cigar bundling and pressing devices. (Cf. gr. 24.)
4. Apparatus for cutting cigar wrappers.
5. Apparatus for applying the wrapper to the filler and for forming the tip.
6. Cigar-making machines, comprising aprons and tables. (Cf. gr. 11.)
7. Cigar-making machines, comprising rollers.
8. Cigar-making machines, comprising grippers.
9. Miscellaneous apparatus for the manufacture of cigars, exclusive of gr. 1-8. (Cf. gr. 18-24.)

**CIGARETTE MACHINES AND THE LIKE. (Gr. 10-15.) (Varieties of cigarettes, gr. 18-24.)**

10. Cigarette-filling machines.
11. Cigarette-making machines, comprising aprons and tables. (Cf. gr. 6.)
12. Machines for making cigarettes in a continuous strand. (Cf. gr. 16.)
13. Feeding tobacco to cigarette making machines.
14. Pocket cigarette fillers, rollers, and the like.
15. Removing covers from defective cigarettes.

**APPARATUS FOR CUTTING CIGARS AND CIGARETTES. (Gr. 16-17.)**

16. Apparatus for cutting cigars, cigar fillers, and cigarettes into definite lengths (continuous-strand cigarettes). (Cf. gr. 12.)
17. Apparatus for trimming the ends of cigarettes.

**SPECIAL VARIETIES OF CIGARS AND CIGARETTES AND PROCESSES FOR MANUFACTURING THE SAME. (Gr. 18-24.)**

18. Cigars and cigarettes with fixed or loose mouthpieces (filters).
19. Cigars and cigarettes with coatings upon the outer surface of the mouthpiece.
20. Manufacture of covers and mouthpieces for cigarettes.
21. Special covers for cigars and cigarettes.
22. Cigars and cigarettes provided with lighters.
23. Processes for manufacture of special cigars and cigarettes in general, exclusive of gr. 18-22. (Cf. gr. 9.)
24. Manufacture of cigars by pressing. (Cf. gr. 3.)

25. Marking cigars and cigarettes (printing and branding).
26. Bands for cigars and cigarettes, machines for making and applying bands.

**79c. Tobacco, Cigars, and Cigarettes, Chemical Features.**

1. Chemical treatment of tobacco and tobacco manufactures.
2. Chemical treatment of tobacco smoke.

**CLASS 80.—CLAY MANUFACTURES, STONE, LIME, CEMENT, PLASTER OF PARIS, ASPHALT, ALSO BRIQUET PRESSES.**

**80a. Machines, Tools, and Appliances (exclusive of those for stone working under d). Molding, so far as Molding Apparatus is Involved, Briquet Presses, Brick Trucks.**

**DIGGING AND DRESSING CLAY AND THE LIKE, ALSO LIME SLAKING AND THE MAKING OF SAND-LIME BRICK. (Gr. 1-8.)**

1. Apparatus for use in connection with clay digging, e. g., excavators and storage places (clay cellars).
2. Apparatus for grinding clay and the like. (Roller mills, gr. 3.)
3. Roller mills for clay and the like. (Cf. 50c.)
4. Clay purifiers.
5. Washers for clay and the like. (Cf. 1a, 8.)
6. Dividing apparatus (measuring apparatus) for clay and the like.
7. Machines for mixing clay and the like.
8. Lime-slaking apparatus and apparatus for making sand-lime brick. (Cf. 80b, 2, 10.)

**PRESSES FOR THE MANUFACTURE OF MISCELLANEOUS CLAY ARTICLES. (Gr. 9-19.)**

9. Simple lever presses for clay manufactures and the like. (Cf. 58b, 1.)
10. Toggle lever presses. (Cf. 58b, 1.)
11. Cam presses and crank presses. (Cf. 58b, 7.)
12. Screw spindle presses and spur-gear presses. (Cf. 58b, 2-4.)
13. Drop presses and hammer presses. (Cf. 31b, 5.)
14. Hydraulic presses. (Cf. 58a, 1.)
15. Repressing apparatus (chiefly special constructions of press covers). (Cf. 58a-b.)
16. Presses comprising molds which reciprocate under the charging hopper, or reciprocating chargers. (Cf. 58a-b.)
17. Presses comprising rotary molding tables.
18. Presses comprising rotary molding drums or chains of molds.
19. Cylinder presses and endless-belt presses. (Cf. 58b, 5-6.)

**PRESSES FOR MAKING SPECIAL ARTICLES OF CLAY, E. G., BRICK, GROOVED TILE, PIPES, ALSO BRIQUET PRESSES. (Gr. 20-33.)**

20. Grooved-tile presses, comprising vertically movable plungers.
21. Grooved-tile presses comprising rotary peripheral molds.
22. Special apparatus for forming the groove of grooved tiling and for forming undercut portions on brick of all kinds.
23. Die expressing presses in which the expressed material has an intermittent movement.
24. Briquet presses, including those for briquetting ore, especially plungers, conduits, and dies, also comminuting apparatus for briquets. (Cf. 10b, 9.)
25. Screw presses for clay manufactures and the like. (Cf. 58b, 9.)
26. Dies for die expressing presses.
27. Dies for die expressing tube presses.
28. Brick molding machines.
29. Details, e. g., safety devices for presses (Cf. 7c, 17; 47a, 18), special plunger structures, and combined presses. (Cf. 58b.)
30. Sanding apparatus, also apparatus for supplying oil or water for brick presses.

## 80a—Continued.

31. Presses for making Dutch tile and plates.
32. Presses for making muffles, capsules, and crucibles.
33. Manufacture of tubes of clay and the like by pressing or stamping.

34. Conveying apparatus for clay manufactures.

## BRICK CUTTERS. (Gr. 35-41.)

35. Brick-cutting apparatus in general.
36. Automatic brick cutters.
37. Apparatus for cutting locking lugs on tile.
38. Devices for removing the rough edge on brick, etc.
39. Apparatus for cutting brick without producing rough edges.
40. Recutters.
41. Details of brick cutters (wire-tensioning devices, etc.). (Cf. gr. 35-40.)

## MOLDING AND CASTING EARTHENWARE, PORCELAIN, AND THE LIKE. (Gr. 42-53.)

42. Making hollow blocks and the like of clay.
43. Machines for making flower pots and the like of clay, porcelain, etc.
44. Turning clay and porcelain wares on the wheel.
45. Molding various articles of clay and the like.
46. Molds and appurtenances for the manufacture of clay wares.
47. Making insulators of porcelain, clay, and the like, also the formation of screw threads. (Cf. 21c, 14; 49c.)
48. Making articles of cement and the like with inserted materials.
49. Making porcelain screens.
50. Making paving stones and the like of mortar, asphalt, etc.
51. Casting apparatus for ceramic materials.
52. Apparatus for making slag brick, also for granulating furnace slag. (Cf. 80b, 4.)
53. Centrifugal machines for ceramic materials.

## TREATMENT OF THE SURFACE OF CLAY WARE, E. G., GLAZING, APPLYING DESIGNS, AND RELATED FEATURES. (Gr. 54-58.)

54. Apparatus for glazing clay ware and the like. (Cf. 80b, 23.)
55. Apparatus for applying engobe.
56. Apparatus for filling in grooves, etc., for making colored tile and tile with surface designs.
57. Applying designs to clay ware and the like by means of stencils. (Cf. 75a-b.)
58. Apparatus for making artificial stone with a surface resembling mosaic.

## 80b. Mortars, Ceramic Compositions, Manufacture of Artificial Stone, so Far as it Relates to the Composition, Glazing.

## MORTARS AND BINDING MEANS THEREFOR, E. G., LIME, CEMENT, PLASTER OF PARIS, AND THE LIKE. (Gr. 1-6.)

1. Mortars in general, e. g., lime mortar. (Cf. gr. 2.)
2. Methods of slacking lime. (Cf. 80a, 8.)
3. Cement (Portland, Roman, etc.).
4. Sorel cement. [Magnesia cement.]
5. Slag cement.
6. Plaster of Paris and plaster of Paris mortar.

## 80b—Continued.

## CERAMIC COMPOSITIONS AND THE LIKE. (Gr. 7-9.)

7. Ceramic compositions for casting.
8. Clay or stone compositions which are to be burned or reduced to sinter, e. g., baked brick, fire brick, burned artificial stone (exclusive of cements, gr. 3-5, and roofing tile, 37c, 1.) (Cf. 32a, 35.)
9. Mineral insulating compositions, including those for heat insulation. (Electric insulating materials, 21c, 2; nonmineral insulating materials, 39b, 9; heat-insulating materials in general, 47f, 27.)

## MANUFACTURE OF ARTIFICIAL STONE SO FAR AS IT RELATES TO THE COMPOSITION. (Gr. 10-22.)

10. Sand-lime brick (compounding and processes for hardening.) (Cf. 80a, 8.)
11. Artificial grindstone and millstone compositions. (Cf. 67c; 50b, 2.)
12. Artificial lithographic stone. (Cf. 15l, 1.)
13. Laminated brick, etc.
14. Facing brick, etc., of clay, cement, plaster of Paris, etc.
15. Artificial marble, mosaic-like artificial stone. (Cf. 75d.)
16. Artificial stone materials with special inserts.
17. Miscellaneous artificial stone compositions, exclusive of gr. 10-16.
18. Imparting porosity to stone compositions.
19. Impregnating stone compositions.
20. Working up inorganic residues and wastes, e. g., lime waste from chemical factories, into artificial stone.
21. Porcelain transparencies and cameos of artificial stone composition.
22. Slag brick (compounding), also slag wool. (Cf. 80a, 52.)
23. Processes for glazing, decorating, and coloring earthenware, artificial stone, and the like. (Cf. 80a, 54; 75b, 24.)
24. Miscellaneous processes in general in the earthenware and artificial stone art which relate to the compositions.
25. Asphalt preparations, also stone compositions containing asphalt and the like.

## 80c. Kilns. (Separate brick-drying apparatus, class 82a.) (Kilns for burning, glazing, and firing or bluing of clay articles such as brick, earthenware, porcelain, and the like, for burning stone, cement, lime, gypsum, and the like, and drying kilns when combined with burning kilns.)

1. Gas-fired ring kilns.
2. Ring kilns with other than gas firing.
3. Chambered kilns.
4. Muffle kilns, glazing and firing kilns.
5. Kilns in which the furnace is fixed and the material is moved.
6. Down-draft kilns.
7. Kilns with heating partitions.
8. Bluing kilns employing steam.
9. Porcelain kilns.
10. Kilns for operations on a small scale.
11. Kilns for materials which are not molded.
12. Gas-fired shaft kilns.
13. Shaft kilns with other than gas firing.
14. Tubular rotary kilns.
15. Arrangements for drying the ware to be fired when combined with kilns.
16. Arrangements or appurtenances for kilns.



**80d. Stone Working.** (Stone-grinding machines, 67a, 14; surface decoration, etc., 75a-b; manufacture of artificial stone so far as it relates to the composition, 80b, 10-22.)

1. Tools for stone working.
2. Working precious stones.
3. Working slate and mica.
4. Machines for splitting stone.
5. Stone-sawing machines.
6. Profile sawing machines.
7. Feeding and dressing of abrasives.
8. Stone working saw blades. (Cf. gr. 5.)
9. Stone drilling machines.
10. Stone working lathes.
11. Machines for hewing stone.
12. Planers for stone working.
13. Machines with rolling cutters for working stone.
14. Milling machines for stone working.

#### CLASS 81.- CONVEYING AND PACKING.

**81a. Packing Machines and Appliances, Weighing Machines Combined with Packing Machines.** (Weighing machines per se, class 42f.)

**FILLING AND CLOSING OF PACKING RECEPTACLES AND THE LIKE.** (Gr. 1-6.)

1. Machines for making, filling, and closing packages. (Cf. 42f, 18; paper-bag making, 54b, 3; box making, 54a, 4-7.)
2. Filling machines for handling viscous fluids. (Cf. 64b, 9, 11, 19.)
3. Machines for filling or packing sacks, boxes, and barrels. (Cf. 42f, 19.)
4. Sack holders.
5. Machines for closing sacks. (Cf. 81c, 8.)
6. Filling apparatus operating by means of centrifugal force.

**PACKAGING, WRAPPING, AND THE LIKE.** (Gr. 7-14.) (Cf. 81c, 20-27; coin packaging, 42a, 18.)

7. Machines for packaging and wrapping in general. (Cf. gr. 1; 531, 11.)
8. Machines for wrapping newspapers.
9. Machines for packing cigarettes. (Cf. 81c, 21.)
10. Apparatus for packing briquets.
11. Apparatus for packing metal leaf. (Cf. 81c, 27.)
12. Apparatus for packing needles.
13. Apparatus for bundling wood. (Cf. 45e, 23-28; 58b, 14.)
14. Apparatus for arranging articles for packing.

**15. Manufacture of packing covers for bottles and the like.**

**16. Weighing machines and measuring apparatus combined with packing machines.** (Weighing machines, 42f; measuring apparatus, 42c.)

**81b. Labeling Machines.**

1. Machines for labeling bottles and cans, processes, machines and devices for insuring bottle closures against unauthorized opening. (Cf. 54g, 22; 64a, 77.)
2. Machines for labeling boxes, parcels, and the like.
3. Feeding labels to labeling machines by means of compressed air or suction.
4. Label holders.
5. Devices for gumming and moistening labels.

**81c. Boxes, Barrels, and Other Packing Cases; Devices for Holding Barrel Heads; Mail Boxes.**

**BOXES OR CHESTS AND APPURTENANCES.** (Gr. 1-5.)

1. Boxes in general. (Cf. 38d, 2.)
2. Corner connections and safety fittings for boxes.
3. Box closures.
4. Collapsible boxes. (Cf. gr. 1; 38d, 2.)

**BARRELS AND APPURTENANCES.** (Gr. 5 7.)

5. Barrels in general.
6. Metal barrels.
7. Devices for supporting barrel heads.

**SACKS AND BAGS.** (Gr. 8-9.)

8. Sacks and sack closures.
9. Mail bag closures.

**BASKETS, CONTAINERS, BOXES [CARTONS, ETC.], AND THE LIKE.** (Gr. 10-15.)

10. Baskets in general.
11. Superposed containers for packing.
12. Boxes, cans, and the like of sheet metal.
13. Cardboard boxes. (Manufacture, 54a.)
14. Folding boxes (collapsible).
15. Paint tubes, etc.

**16. Seals (for insuring the safety of packages and the like).**

**17. Fastening labels and the like to packages.** (Cf. 8f, 13; 54b, 8; 54g, 22.)

**BALE TIES AND THE LIKE.** (Gr. 18-19.)

**18. Ties for bales, boxes, and the like.**

**19. Tools and machines for making ties.**

**PACKING CASES.** (Gr. 20-27.)

20. Packing cases for fruit and eggs.
21. Packing cases for cigars and cigarettes. (Cf. 81a, 9.)
22. Packing cases for miscellaneous foodstuffs.
23. Packing cases for cycles.
24. Packing cases for carboys.
25. Packing cases for bottles and the like. (Cf. gr. 26.)
26. Packing materials for bottles and the like. (Cf. gr. 25.)
27. Packing cases for articles of various kinds, e. g., gas mantles, chemicals, metal leaf, condensed gases, etc. (Cf. 81a, 11.)

**MAIL BOXES.** (Gr. 28-30.) (House mail boxes, 341, 25.)

**28. Mail boxes in general.** (Cf. gr. 29, 30.)

**29. Mail boxes with means for simultaneously closing the box and the mail bag.**

**30. Mail boxes with arrangements for preventing theft.** (Cf. 74a, 24.)

**81d. Disposal of Garbage.** (Garbage chutes in houses, class 37f.)

1. Garbage wagons.
2. Garbage wagons with positive connection between the wagon cover and a slide in the garbage receptacle.

## 81d—Continued.

3. Garbage receptacles.
4. Disinfecting features in connection with garbage wagons and receptacles.
5. Miscellaneous features in connection with the disposal of garbage. (Cf. 65a, 6.)

**81e. Loading and Unloading Apparatus and Appliances, Including Transporting Material in Bulk, Bucket Elevators, Pneumatic Conveyers, Storage and Warehouse Equipment, Granaries, etc., Prevention of Spontaneous Combustion and Explosions (see also Class 341), Warehouse Railways, Tubular Postal Systems.**

**BELT CONVEYERS, CHAIN CONVEYERS, SCREW CONVEYERS, AND THE LIKE. (Gr. 1-5.) (Bucket conveyers, Gr. 6-13.)**

1. Belt conveyers.
2. Conveyor belts comprising a series of plates, bars, and the like.
3. Drag chains operating in conveyor troughs.
  1. Screw conveyers (horizontal).
  5. Screw elevators (vertical).

**BUCKET CONVEYERS FOR LOADING AND UNLOADING. (Gr. 6-13.) (Excavators, 84d.)**

6. Bucket conveyers with pivoted buckets.
7. Bucket elevators.
8. Extensible bucket elevators.
9. Bucket elevators comprising a series of buckets so arranged that one bucket empties into the next.
10. Miscellaneous features in connection with bucket conveyers (lubricating apparatus, discharging apparatus, bucket fastenings, and the like).
11. Feeding apparatus for bucket conveyers and the like.
12. Conveyers for feeding bucket elevators and the like. [For drawing material to the elevator leg.]
13. Chain elevators. (Cf. 35a, 8.)

**CHUTES AND CONVEYER TROUGHS, PNEUMATIC CONVEYERS, AND THE LIKE. (Gr. 14-18.)**

14. Chutes, trough-shaped and tubular.
15. Conveyor troughs (shaking troughs).
16. Trough conveyers, including plates or the like, attached to a reciprocating bar.
17. Pneumatic conveying apparatus.
18. Conveying by means of hydraulic currents. (Cf. 5d, 9.)

**APPARATUS FOR LOADING AND UNLOADING FROM STORAGE PLACES, SHIPS, WAGONS, AND THE LIKE. (Gr. 19-32.)**

19. Self filling hoisting receptacles.
20. Hoisting buckets.
21. Circular-movement tippers.
22. Apparatus for tipping wagons.
23. Miscellaneous apparatus for unloading from ships and storage places. (Cf. 65a, 81.)
24. Miscellaneous loading apparatus.
25. Miscellaneous apparatus for loading vehicles with material in bulk (coaling locomotives, loading coke from coke ovens). (Cf. Gr. 26.)
26. Apparatus for loading vehicles by means of endless chains. (Cf. Gr. 25.)
27. Apparatus for distributing material in storage places and vehicles [trimmers].
28. Miscellaneous mechanism for transporting goods in parcels. (Cf. 63b, 33.)
29. Rolling apparatus for heavy objects. (Cf. 63b, 38.)

## 81e—Continued.

30. Roller conveyers. (Cf. 7a, 17.)
31. Loading platforms.
32. Miscellaneous mechanism for piling material in bulk (piling up dump piles).

**STOREHOUSE AND WAREHOUSE EQUIPMENT. (Gr. 33-36.)**

33. Grappling hooks for bales and the like.
34. Miscellaneous devices for carrying brick, mortar, and other articles.
35. Apparatus for tipping and transporting barrels. (Cf. 64c, 46.)
36. Miscellaneous arrangements for granaries, grain elevators, and analogous storage receptacles. (Buildings, 37f, 2.)

**PREVENTION OF SPONTANEOUS COMBUSTION AND EXPLOSIONS IN STOREHOUSES, BARRELS, AND THE LIKE. (Gr. 37-38.) (Oil cans and alcohol cans with means to prevent explosions, 34l, 20.)**

37. Arrangements to prevent spontaneous combustion of coal, cotton, and the like.
38. Arrangements to prevent explosions in receptacles filled with combustible fluids, as petroleum, benzine, etc. (Cf. 4a, 2; 34l, 20; 64c, 44.)

**WAREHOUSE RAILWAYS, TUBULAR POSTAL SYSTEMS, AND THE LIKE. (Gr. 39-46.)**

39. Warehouse railways.
40. Tubular postal systems in general (carriers). (Cf. gr. 40-44.)
41. Switches for tubular postal systems.
42. Sending stations for tubular postal systems.
43. Receiving stations for tubular postal systems.
44. Indicating apparatus for tubular postal systems.
45. Roads for quick transportation of mail by means of vehicles operated electrically or otherwise.
46. Miscellaneous mechanism for conveying mail in buildings (mail chutes and mail elevators). (Cf. 35a, 5.)

**CLASS 82.—DRYING, INCLUDING DRYING KILNS; COFFEE ROASTERS; CENTRIFUGAL MACHINES OF GENERAL APPLICATION.**

**82a. Drying Machines, Methods, Apparatus, Kilns (exclusive of malt kilns, class 6a), Coffee Roasters.**

(Drying barrels, 6f; bottles, 64b; molds and cores, 31a; yarn and fabric, 8b; hair on the head, 33c; wood and the like if associated with steeping or impregnating, 38h; cables, 21c; leather 28b, 4, 7, 14, 17; linoleum, 8h; paper and paper board, 55d; photographic plates and the like, 57c; hose, 61a; distillery waste, 53g; laundry, 8d; sugar, 89d; drying furnaces combined with brick kilns, etc., 80c; drying kilns for hops, 6a; drying frames for grain, 45e; drying sheds, 37f, 45e.)

**DRYING PROCESSES AND DRIERS, INCLUDING KILN DRYING PROCESSES AND KILNS. (Gr. 1-22.)**

1. Processes of drying, including kiln drying.
2. Drying chambers, (kilns). (Hop kilns, 6a, 11.)
3. Drying conduits.
4. Drying houses.
5. Drying closets. (Cf. 34l, 11; 42i, 12; 42l, 13.)
6. Driers for hollow bodies. (For molds and cores, 31a.)



## 82a—Continued.

7. Driers with tilting-section floors.
8. Driers with endless-carrier floors.
9. Driers comprising movable receptacles for drying rooms, walls, floors, and the like, e. g., coke baskets.
10. Stationary drying stands.
11. Rotary drying stands.
12. Plate or tray driers with fixed trays.
13. Plate or tray driers with revolving trays.
14. Drying troughs with rotary conveying mechanism.
15. Drying troughs without rotary conveying mechanism.
16. Shaft driers.
17. Multiple floor or shelf driers.
18. Cylinder driers with screw conveyers.
19. Cylinder driers without screw conveyers.
20. Driers comprising systems of pipes.
21. Electro-osmotic driers. (Cf. 10c, 6.)
22. Miscellaneous driers, exclusive of gr. 2-21.

## DETAILS AND APPURTENANCES OF DRIERS AND DRY KILNS. (Gr. 23-25.)

23. Auxiliary apparatus for driers (stirrers, shovels, chargers, dischargers, and the like).
24. Evaporators for drying mechanism.
25. Air heaters for drying mechanism.

## COFFEE ROASTERS AND THE LIKE. (Gr. 26-28.)

26. Horizontal rotary coffee roasters.
27. Coffee roasters, exclusive of gr. 26
28. Auxiliary apparatus for coffee roasters.

- 82b. Centrifugal Machines.** (Centrifugal machines of general application; for those designed for special purposes see 1a, 23; 8a, 5, 19; 8b, 1; 8d, 6; 10c, 7; 12d, 1, 13d, 26; 31c, 18; 32a, 24; 421, 6; 45e, 18; 1e, 15h; 55c; 55d; 72b, 6; 77f, 24; 78c, 6; 77f, 24; 78e, 6; 80a, 53; 85c, 5; 89f.)

## CENTRIFUGAL MACHINES. (Gr. 1-9.)

1. Centrifugal machines for continuous operation.
2. Horizontal centrifugal machines for continuous operation. (Cf. 45g, 9.)
3. Vertical centrifugal machines for continuous operation. (Cf. 45g, 8.)
4. Centrifugal machines designed to discharge underneath. (Cf. 45g.)
5. Centrifugal machines arranged to discharge above (scoop mechanism). (Cf. 45g, 14.)
6. Planetary movement drums for centrifugal machines.
7. Centrifugal machines for filtering and drying.
8. Centrifugal machines having repeated separating action.
9. Centrifugal machines of special kinds, exclusive of gr. 1-8.

## DETAILS OR APPURTENANCES OF CENTRIFUGAL MACHINES. (Gr. 10-19.)

10. Bearings. (Cf. 45g, 10.)
11. Driving mechanism. (Cf. 45g, 10.)
12. Stop mechanism and brakes.
13. Devices for regulating the rotary movement.
14. Devices for regulating the equilibrium.
15. Devices for regulating the feed.
16. Heating and prevention of frothing in connection with centrifugal machines.
17. Stirring devices and parts inserted in the basket. (Cf. 45g, 11-13.)
18. Shields, multiple casings, and screen baskets.
19. Elements or appurtenances, exclusive of gr. 10-18.

## CLASS 83.—HOROLOGY.

- 83a. Clocks and Watches** (not including electric), **Calendar Clocks**; also **Shiftable Calendars Analogous to Calendar Clocks**.

## MOVEMENTS FOR CLOCKS OR WATCHES. (Gr. 1-9.)

1. Springs.
2. Spring housings.
3. Mainspring fastenings, safety devices operative in case of breakage or to prevent breakage, regulators.
4. Watch movements.
5. Movements comprising a plurality of springs, or weights and springs.
6. Movements comprising main and secondary springs.
7. Movements designed to run a long time without rewinding.
8. Weight-operated movements.
9. Movements for large clocks (with springs).

## PINIONS AND RATCHET MECHANISM FOR CLOCKS AND WATCHES. (Gr. 10-11.)

10. Pinions and arbors.
11. Ratchet mechanism.

## INDICATING DEVICES FOR CLOCKS AND WATCHES, AND CLOCKS AND WATCHES DISTINGUISHED BY THE NATURE OF THE INDICATING MECHANISM. (Gr. 12-19.)

12. Hands.
13. Dials and graduations.
14. Dial fastenings.
15. Timepieces which indicate the time at a number of different places.
16. Timepieces with projected figures, rotary disks, or belts.
17. Timepieces in which the time is ascertained by the sense of touch.
18. Illuminated timepieces.
19. Miscellaneous details of indicating apparatus.

## REGULATORS. (Gr. 20-32.)

20. Pendulums.
21. Torsion pendulums.
22. Regulation of the escapement.
23. Balance wheels and balance spring adjusters.
24. Compensation.
25. Timepieces in which the works are partially or entirely visible.
26. Shiftable potances and other adjusting devices; also escapements mounted in separate frames.
27. Anchor constructions and means for limiting the movement of the anchor.
28. Free escapements.
29. Free anchor escapements.
30. Miscellaneous escapements.
31. Torsion pendulum escapements.
32. Fluid escapements.

## WINDING APPARATUS. (Gr. 33-42.) (Electric winders, 83b, 7.)

33. Winding apparatus for wall clocks and stand clocks.
34. Winders of the pedometer type, winding apparatus operated by wind or water power; also devices which operate intermittently.
35. Thermal and barometric winding apparatus.
36. Winding indicators.
37. Keys.
38. Stem-winders comprising the Breguet ratchet catch.
39. Stem-winders comprising rockers or yokes.
40. Stem-winders in which the winding shaft is shifted in order to connect or disconnect.

## 83a—Continued.

41. Miscellaneous winding and setting apparatus for watches, exclusive of gr. 38-40.
42. Bow fastenings and pendants, means for fastening the winding shaft.

## CASES AND FRAMES. (Gr. 43-52.)

43. Supports for clock movements.
44. Clock hangers.
45. Frames and cases for wall clocks and stand clocks.
46. Frames and cases for watches.
47. Fastening the movement by means of the winding shaft and other varieties of watch movement fastenings.
48. Jewel fastenings and bearings.
49. Protectors and means for excluding dust.
50. Separate case and frame details.
51. Ornamentation, including combinations with mirrors, photographs, etc.
52. Special constructions of cases and frames.

## STRIKING MECHANISM. (Gr. 53-63.)

53. Count-wheel striking mechanism.
54. Snail-and-rack striking mechanism.
55. Striking mechanism comprising wheel-like lifting pieces.
56. Striking mechanism comprising cylinder wheels and the like for moving the rack.
57. Noiseless rack movements.
58. Arrangements for winding clock trains by means of the striking train, and vice versa.
59. Repeating striking mechanism, quarter-hour strikes.
60. Shiftable and adjustable hammers; also means for disconnecting the hammer shaft.
61. Gongs. (Cf. 51d, 19.)
62. Details of striking mechanisms, flies, friction governors, and the like.
63. Striking mechanism of special constructions.

## ALARM CLOCKS AND THE LIKE. (Gr. 64-75.) (Electric alarms 74a, 13-17.)

64. Simple alarm clocks.
65. Alarm clocks with automatic disconnecting and stopping devices.
66. Alarm clocks which may be set for a number of different times.
67. Alarms which may be set to the minute.
68. Alarms with 24-hour release.
69. Alarm clocks which may be set for a plurality of days.
70. Repeating alarms (intermittent).
71. Alarm clocks in combination with beds.
72. Alarm clocks combined with lighters. (Cf. 4d, 28; 34l, 8; 74a, 17.)
73. Alarm clocks combined with musical or other apparatus. (Cf. gr. 83.)
74. Means to prevent improper turning of the alarm indicator.
75. Pocket alarms.

## CLOCKS, ETC., WITH SECONDARY MECHANISM. (Gr. 76-79.)

76. Clocks with cuckoo or other bird calls, trumpet clocks.
77. Clocks combined with phonographs and musical clocks (exclusive of alarm clocks, group 73.)
78. Calendar clocks and shiftable calendars analogous to calendar clocks. (Cf. 42n, 12.)
79. Clocks with movable figures (art clocks or puppet clocks).

## 83a—Continued.

## SPECIAL VARIETIES OF TIMEPIECES. (Gr. 80-86.)

80. Fluid timepieces, especially clepsydras and glasses and sun dials.
81. Pneumatic and hydraulic clocks.
82. Clocks with hidden works.
83. Timepieces combined with pedometers, speedometers, barometers, compasses, games, etc.
84. Devices for measuring a short duration of time, egg-cooker clocks. (Cf. 34l, 6.)
85. Stop watches and the like (Chronographs, split seconds.)
86. Antimagnetic timepieces and demagnetizing. (Cf. 2lg, 5.)

## 83b. Electric clocks (exclusive of electric alarms, class 74a). (Cf. 21c, 20.)

1. Independent electric clocks and electric primary clocks.
2. Electric secondary clocks.
3. Shifting mechanism for electric clocks. (Cf. 21g, 3.)
4. Electric hand setters.
5. Electric regulating devices for pendulums or balance wheels.
6. Electric clock strikes.
7. Electric winders.

## 83c. Machines, Tools, and Other Appliances of Special Application in Watchmaking.

1. Pinion cutting and finishing machines.
2. Lathes.
3. Watchmaker's tools in general.
4. Cutters.
5. Jewel-setting tools.
6. Pliers and holding devices.
7. Hand and dial tools.
8. Watchmakers' measuring and regulating appliances.

## CLASS 84.—HYDRAULIC ENGINEERING AND FOUNDATIONS.

## 84a. Hydraulic Engineering, Including Correction of Streams, Coast Protection, Weir and Lock Structure, Dike and Sluice Structure, Harbor Engineering, Canals and Dams.

1. Correction of streams, rock blasting, removal of bars. (Dredges, 84d.)
2. Protection of coasts and banks, earth anchors. (Cf. 37b, 5.) (Protection against torpedoes and mines, 65d, 8.)
3. Weir structure and lock equipment. (Cf. 84b, 1.)
4. Dike and sluice structure; dams. (Air dams for mines, 5d, 1.)
5. Harbor and marine engineering, canals, general hydraulic engineering.
6. Canals and appurtenances for water-power plants; water gratings. (Cf. 88a, 11.)

## 84b. Ship-Lifting Mechanism.

1. Mechanism for lifting ships vertically; locks with auxiliary basins.
2. Inclined plane ship-lifting mechanism; marine railways.

## 84c. Foundations, Including Those for Buildings, e. g., Tools and Apparatus for Investigating and Securing Foundations, Forming Foundations by Means of Piling and Timber Platforms, Stone Coffins, Sunk Wells, Caissons, Sunken Stone or Concrete Work, Pile Drivers.

1. Investigating and securing foundations. (Cf. 5c, 11.)



## 84c—Continued.

2. Forming foundations by means of piling and timber platforms, sheet piling, piles. (Cf. 37b, 3; 80a, 42, 46.)
3. Stone collars, sunk wells, pneumatic foundation work, diving bells. (Cf. 65a, 5, 73.) Sunken stone and concrete work.
1. Pile drivers. (Cf. 19c, 9.) Rammers for concrete. (Cf. 80a, 13, 33.)
5. Tunnels under water. (Cf. 19f.)

## 84d. Dredges and Excavators, Excavating Foundation Sites.

1. Dredges or excavators in general (hand excavators, screw excavators, bucket excavators, scrapers, excavators with reciprocating buckets guided on cable ways). (Cf. 5b, 11.)
2. Chain-and-bucket excavators, dipper excavators. (Cf. 19e, 1.)
3. Clamshell bucket excavators.
1. Suction pump and force pump excavators, compressed-air excavators, washers
5. Apparatus for conveying and separating excavated material (scows, chutes, pipes, conveyer belts). (Cf. 81e, 1-5, 14-18.)

## CLASS 85. WATER. WATER PURIFICATION. WATER SUPPLY. AND SEWERAGE.

## 85a. Drinking Water, Including Mineral Waters, Aerated Water, and Distilled Water.

## MECHANICAL PURIFICATION AND PREPARATION OF DRINKING WATER, INCLUDING MINERAL WATER, AERATED WATER, AND DISTILLED WATER. (Gr. 1-6.)

1. Purification of drinking water by pasteurizing, also water distillation.
2. Apparatus for preparing aerated water (soda water), including stirring or charging mechanism.
3. Apparatus for preparing aerated water (soda water), without stirring or charging mechanism.
4. Filling closures for soda water containers, including those combined with gas capsules. (Cf. gr. 5.)
5. Gas capsules for the preparation of soda water. (Cf. 12f, 2; 64c, 7.)
6. Miscellaneous mechanism for handling natural and artificial mineral waters, including storing, conveying, etc. (Cf. 85d.)

## CHEMICAL TREATMENT OF DRINKING WATER, INCLUDING MINERAL AND AERATED WATER. (Gr. 7-8.)

7. Purification of drinking water by chemical means, e. g., treatment with atmospheric oxygen and ozone, especially for removing iron and manganese, including such treatment for industrial use (cf. 85b), and by filtration (cf. 12d); also by electrolysis.
8. Effervescent mixtures (chemical mixtures for making aerated water).

## 85b. Purification of Water for Industrial Use; Hardening or Softening; Boiler-Sediment Preventives. (Filters, class 12d.)

1. Purification of water for industrial use by means of chemicals; hardening and softening, boiler-sediment preventives. (Cf. 13b, 7.) (Removal of iron and manganese, 85a, 7.)
2. Combined chemical and mechanical water purification, also purely mechanical purification. (Cf. gr. 3.)
3. Apparatus for supplying chemicals for water purification.

## 85c. Purification of Waste Water. (Filters, class 12d.)

1. Purely chemical purification of waste water.
2. Combined chemical and mechanical purification of waste water.
3. Bacterial purification (oxidation bodies and charging apparatus).
4. Electrolytic purification.
5. Purification of waste water by centrifugal apparatus
6. Mechanical purification of waste water, exclusive of gr. 5. (Cf. gr. 2.)

## 85d. Water Supply, Including Plants and Apparatus for Obtaining Water, Storage (pumps, class 59, reservoirs, class 37f), and Water Distribution. (Valve structure, class 47g.)

1. Systems and apparatus for obtaining water (wells including screens).
2. Domestic water-supply systems.
3. Domestic water reservoirs. (Cf. 37f, 3.)
4. Apparatus for drawing water for house use. (Valve structures, 47g.)
5. Faucets with means for attaching hose.
6. Cushions for water conduits.
7. Jet regulators for faucets.
8. Safety devices to prevent bursting of pipes in case of freezing.
9. Apparatus for preventing damage in case of bursting of pipes.
10. Apparatus for thawing out frozen pipes.
11. Apparatus to prevent pipes from freezing.
12. Hydrants.
13. Arrangements for draining systems of pipes. (Valves, etc., 47g, 37.)
14. Air traps for vertical pipes. (Cf. Gr. 13.)

## 85e. Sewers, Including Ventilation and Emptying of Cesspools.

1. Sewer systems.
2. Apparatus for emptying sewers and cesspools by means of pressure or suction.
3. Apparatus for damming up and automatically reopening waste and drainage conduits.
4. Apparatus for separating solid and fluid materials from sewerage.
5. Ventilating arrangements for sewers and cesspools.

## SEWER CONDUITS. (Gr. 6-8.)

6. Street sewer pipes.
7. House sewer pipes.
8. Connections for sewer pipes. (Cf. 47f.)

## INLET SHAFTS AND CATCH BASINS. (Gr. 9-11.)

9. General arrangements for inlet shafts and catch basins, including sand traps.
10. Covers for inlet shafts and catch basins.
11. Runways and gratings for inlet shafts and catch basins.

## LIQUID SEALS FOR SEWER SYSTEMS. (Gr. 12-14.)

12. Liquid seals for waste pipes. (Cf. gr. 14.)
13. Liquid seals for catch basins and inlet shafts. (Cf. gr. 14.)
14. Liquid seals comprising mechanism to prevent the liquid from being removed by suction.

## STOPS FOR SEWER CONDUITS. (Gr. 15-17.)

15. Stops for street sewers.
16. Stops for house sewer pipes.
17. Back-water stops for sewer systems.

## 85e—Continued.

## APPARATUS FOR CLEANING SEWERS. (Gr. 18-20.)

18. Brushes and the like for sewer cleaning.
19. Mud lifters for sewers and inlet shafts.
20. Flushing apparatus for sewers.

21. Wash basins and sinks which are connected to the sewer conduit.

## 85f. Baths, Including Mixing Valves and Cocks and Spraying Apparatus. (Valve structures, 47g; shower baths, 34k.) (Cf. 36e, especially Gr. 5.)

1. Mixing cocks for baths. (Cf. 47g, 25; 64c, 29.)
2. Mixing valves [poppet] for baths. (Cf. 47g, 20.)
3. Mixing slide valves for baths.
4. Mixing apparatus for bath water exclusive of gr. 1-3.
5. Spraying mechanism (general arrangements) for baths.
6. Spraying nozzles for baths.
7. Automatic cut-off devices for bath water conduits.
8. Miscellaneous equipment and appurtenances for bath water conduits, exclusive of gr. 1-7.

## 85g. Fountains and Jet Nozzles. (Table fountains, 34l.)

1. Fountains. (Table fountains, 34l, 26.)
2. Jet nozzles, e. g., for fountains, fire engines, garden hose.
3. Nozzle caps. (Cf. Gr. 2; 61a 16.)

## 85h. Water-Closets, Including Arrangements for Disinfecting. (Valve structures, 47g; closets other than water-closets, 34k.)

## FLUSHING APPARATUS COMPRISING CISTERNS. (Gr. 1-8.)

1. Flushing cisterns with bell siphons.
2. Flushing cisterns with bent tube siphons.
3. Flushing cisterns with valve closures.
4. Intermittently operating flushing cisterns with siphons.
5. Intermittently operating flushing cisterns without siphons.
6. Flushing apparatus with air chambers and pressure chambers.
7. Flushing cisterns with tilting receptacles.
8. Flushing cisterns which are empty when not in use.

9. Flushing apparatus for closets without cisterns. (Flushing cocks and valves, 47g.)

10. Flushing apparatus connected to the closet seat or cover.

11. Apparatus for preventing contamination of drinking water conduits.

12. Closet bowls.

13. Valves and tilting bottoms in closet bowls and the like.

15. Pipe connections for closet bowls.

16. Ventilation of water-closets.

17. Disinfecting apparatus for water-closets. (Cf. 30i, 2.)

18. Miscellaneous mechanism in connection with water-closets, exclusive of gr. 1-17.

19. Urinals with flushing arrangements.

## CLASS 86.—WEAVING.

## 86a. Machines for Preparing Materials for Weaving.

1. Warp spooling machine, see 76d, 1 to 5.
2. Warping frames and beam warpers, also apparatus for maintaining tension in the yarn, yarn distributing devices and stop mechanism for warpers, spool frames (cf. 76d, 17), apparatus for operating warping reeds, warping reeds, expansion reeds. (Cf. 86g, 1.)
3. Application of size, water, or paraffine to the warp. (Cf. 8a, 25.)
4. Cleaning or clearing the warp. (Cf. 76d, 19.)
5. Preparation of the weft (spooling machines, 76d, 4), wetting the weft, pressing and setting up the bobbins, cleaning bobbin cells (setting the bobbin upon the shuttle spindle in combination with shuttle or bobbin replacing apparatus, 86c, 24).

## 86b. Shedding Apparatus, Dobby and Jacquard Looms.

## DOBBY LOOMS, ETC. (Gr. 1-4.)

1. Cam motions and other harness motions, exclusive of gr. 2-4, retractors, shed-closing devices. (Cf. gr. 4, 10.)
2. Single-lift Dobby looms, including those for double warp shedding.
3. Double-lift Dobby looms, including those for double warp shedding.
4. Details of Dobby looms, including knives, knife movements, lifting-bars, lifting-wires, needles; arrangements of needles, needle boards, prisms, arrangements of prisms (two prisms), prism rotating devices, prism guides and guide movements, harness and heddle frame stop motions (stop devices operating upon breakage of parts of the harness).

## JACQUARD LOOMS. (Gr. 5-10.)

5. Single lift Jacquard looms.
6. Double-lift Jacquard looms.
7. Jacquard looms for weaving damask goods.
8. Jacquard looms for double warp shedding.
9. Jacquard looms for weaving double pile fabric.
10. Details of Jacquard looms, including knives, knife-turning devices, lifting bars and lifting-bar movements, gratings for moving the lifting wires, lifting wires, needles and needle boards, prisms, arrangements of prisms, multiple prisms, prism-rotating devices, prism guides and guide movements, card stop motions, electric Jacquard looms, Jacquard looms with endless paper cards (Verdol system), shed-closing devices for Jacquard looms.

## 86c. Weaving Fabric without Pile.

## METHODS. (Gr. 1-7.)

1. Fabrics and processes of manufacture in general, elastic fabrics.
2. Belt weaving.
3. Hose and sack weaving, endless fabrics.
4. Fabrics for tires. (Cf. 63e, 9.)
5. Conical woven articles.
6. Gobelin weaving.
7. Gauze weaving, including harness, heddles, reeds, and the like.

## LOOMS. (Gr. 8-17.)

8. Hand looms and darning apparatus (cf. 52a, 30), shed-forming reeds.
9. Semimechanical looms.



**86c—Continued.**

10. Ribbon looms.
11. Looms for weaving figured goods.
12. Looms for the simultaneous weaving of a plurality of fabrics.
13. Selvage apparatus, edge trimming devices, the making of fringe on the loom, weaving bordered articles.
14. Looms with fixed bobbins (also positive shuttle motions).
15. Horsehair looms.
16. Circular looms.
17. Miscellaneous looms, exclusive of gr. 8-16; vertical looms.

**LOOM PARTS. (Gr. 18-32.)**

18. Warp-tensioning devices for looms.
19. Apparatus for winding fabric (take-ups).
20. Apparatus for measuring fabric. (Cf. gr. 13.)
21. Weft-inserting devices, shuttle motions (picking apparatus) (Positive shuttle motions, gr. 14.)
22. Shuttle changing (drop boxes, etc.).
23. Shuttle replacing.
24. Bobbin replacing.
25. Weft-thread replenishing. (Cf. gr. 14; 86d, 2, 3.)
26. Loom-driving mechanism and stop mechanism, weft searching.
27. Beating-up apparatus, lay mechanism, shuttle binders, and lay motions.
28. Protectors.
29. Loose reed motions.
30. Warp stop motions. (Warp detector shuttles, 86g, 8.)
31. Weft stop motions and weft feeler mechanism. (Weft detector shuttles, 86g, 8.)
32. Weft-thread cutting devices (cf. gr. 23-24) and apparatus for cutting the fabric in the loom. (Cf. 8f, 8-10.)

**86d. Pile Fabrics, Including Velvet, Plush, and Chenille.****WEFT PILE FABRICS. (Gr. 1-3.)**

1. Weft pile fabrics woven over pile wires.
2. Tufted pile fabrics (carpet knotting looms and the like).
3. Pile ribbon and chenille weaving. (Cf. 25c, 8.)

**WARP PILE FABRICS. (Gr. 4-7.)**

4. Warp pile fabrics woven over pile wires.
5. Warp pile fabrics woven double and designed to be cut apart to form the pile.
6. Terry fabrics.
7. Warp pile fabric formed in different ways.

8. Regulators for warp pile.
9. Pile-cutting devices in connection with the loom. (Cf. 8b, 28.)
10. Pile weaving in general, exclusive of gr. 1-9.

**86e. Cane, Straw, and Slat Weaving (without special groups).****86f. Wire Weaving (without special groups).****86g. Tools and Appliances for Weaving.**

1. Reeds. (Cf. 86c, 7.)
2. Heddles. (Cf. 7d, 8; 86c, 7.)
3. Heddle frames. (Cf. 86c, 7.)
4. Heddle-frame supports.

**86g—Continued.**

5. Temples.
6. Shuttle guards.
7. Shuttles in general.
8. Ribbon loom shuttles, positive motion and gripper shuttles, weft and warp detector shuttles.
9. Weft threaders.
10. Pickers.
11. Harness weights and hangers.
12. Harness boards.
13. Thread-knotting devices for weaving.
14. Miscellaneous appliances for weaving.

**86h. Auxiliary Machines Used in Connection with Weaving, e. g., Lease Making, Twisting-in and Drawing-in Machines, Pattern and Card Making, etc.**

1. Pattern making.
2. Jacquard and Dobby cards (peg inserting and removing), card guides, guide wires.
3. Reading-in apparatus.
4. Card-punching apparatus.
5. Card-lacing machines.
6. Warp twisting-in or knotting machines. (Thread-knotting devices, 86g, 13.)
7. Warp drawing-in machines, including machines for inserting or drawing in warp into the reeds or harness, lease forming machines (cf. gr. 6), and drawing-in tools.
8. Apparatus performing finishing operations on the loom. (Cf. 8a, 25.)

**CLASS 87.—TOOLS AND WORKMEN'S APPLIANCES OF GENERAL APPLICATION, INCLUDING PNEUMATIC TOOLS.****87a. Tools and Appliances for Fastening or Gripping, for Loosening and for Holding, Including Vises.****VISES. (Gr. 1-5.) (Cf. 49b, 32.)**

1. Parallel vises.
2. Pivoted-jaw vises.
3. Pipe vises and the like.
4. Hand or pin vises and the like.
5. Details of vises and the like.

**WRENCHES. (Gr. 6-13.)**

6. Wrenches with fixed jaws, including those with obliquely adjustable handles.
7. Wrenches with jaws adjustable by means of screws.
8. Wrenches with jaws fixed in the adjusted position by means of pawls.
9. Wrenches with jaws fixed in the adjusted position by means of friction detents.
10. Wrenches with various adjusting devices, exclusive of gr. 7-9.
11. Wrenches for special purposes.
12. Wrenches with intermittent grip mechanism for turning the nut.
13. Wrenches with various devices for turning the nut, exclusive of group 12.

**PIPE WRENCHES. (Gr. 14-15.)**

14. Pipe wrenches with gripping jaws. (Pipe cutters, 7c, 19.)
15. Pipe wrenches with chains, belts, and the like.

**MISCELLANEOUS TOOLS, EXCLUSIVE OF GROUPS 1-15. (Gr. 16-22.)**

16. Pliers and tongs of general application.
17. Nail extractors. (Railway spike pullers, 19a, 28.)

## 87a—Continued.

18. Nailing apparatus and nail holders. (Cf. 38d, 5; 71c, 38-46.)
19. Screw extractors.
20. Key extractors.
21. Wire stretchers and wire clamps.
22. Miscellaneous tools, exclusive of gr. 16-21.

## 87b. Tools and Appliances for Working Upon and Changing the Form of Materials.

1. Hand hammers and picks.
2. Pneumatic tools of general application, especially pneumatic hammers. (Cf. 5b, 1, 4; 80d.)
3. Electric and mechanically driven hand hammers.
4. Cutters for pliers.
5. Seal pliers for hand use (devices for affixing seals). (Manufacture of seal blanks, 7c, 10, 47; 7f; 31c, 25; 39a; 49g; 54e; 54f; cf. 81b, 1; 81c, 16.)
6. Miscellaneous tools and appliances, exclusive of gr. 1-5.

## 87c. Combination or Universal Tools. (Without special groups.)

## 87d. Handle Fastenings. (For brooms and the like, class 9.)

1. Handle fastenings for hammers and the like; also hammer handles.
2. File handles and the like.
3. Tool holders. (For dental engines, 30b, 2.)

## CLASS 88.—WIND MILLS AND HYDRAULIC MOTORS.

## 88a. Turbines and Water Wheels. (Steam turbines, 14c.)

## TURBINES. (Gr. 1-9.)

1. Impact wheels.
2. Reaction wheels.
3. Friction turbines and screw turbines. (Steam turbines, 14c, 3.)
4. Impulse or action turbines.
5. Reaction turbines.
6. Regulation of turbines.
7. Bearings for turbines. (Cf. 14c, 10.)
8. Lubrication of turbines.
9. Devices for reducing clearance for turbines and the like.

## WATER WHEELS AND APPURTENANCES. (Gr. 10-11.)

10. Water wheels.
11. Mill gratings so far as combined with water wheels. (Cf. 84a, 6; 85c, 6.)

## 12. Miscellaneous.

## 88b. Hydraulic Pressure Motors and Other Hydraulic Motors, Exclusive of Those Mentioned Under a.

1. Hydraulic motors with rectilinearly reciprocating pistons, including those with oscillating or rotating cylinders, radial cylinder motors.
2. Hydraulic motors with circularly oscillating or rotating pistons.
3. Wave and tide motors.
4. Current motors, buoyancy motors, swinging and other hydraulic motors.

## 88c. Windmills.

1. Wind wheels with vertical axes.
2. Wind wheels with horizontal axes.
3. Special arrangements and details of windmills.

## CLASS 89.—SUGAR AND STARCH.

## 89a. Washing Sugar Beets and Potatoes; Conveying Apparatus.

1. Machines for washing sugar beets and potatoes for extraction of sugar, starch, and the like. (Machines for washing beets for feed, 45c, 22; for grain, 50a, 2.)
2. Stone traps and sand traps for sugar-beet washers.
3. Conveying apparatus for sugar beets and the like. (Cf. 45c, 30.)

## 89b. Slicing Machines and Slicing Knives; Presses. (Cf. 45e; 53d; 58b.)

1. Beet-cutting machines, comprising horizontal or vertical cutting cylinders. (Machines for cutting beets for feed, 45c.)
2. Machines for cutting sugar cane. (Cf. 53d.)
3. Sugar-beet graters (endless belts and the like provided with cutters).
4. Knives for slicing sugar beets.
5. Screw and cone presses for removing diffusion liquor from beets. (Cf. 58b, 9.)
6. Belt presses for removing diffusion liquor from beets. (Cf. 58b, 9.)

## 89c. Extraction and Purification of Juice From Sugar Beets, Sugar Cane, and the Like.

1. Processes of extracting juice from sugar beets, cane, and the like.
2. The use of chemicals in the extraction of juice; extracting sugar from beets by means of alcohol and the like. (Cf. gr. 11.)
3. Juice-extracting apparatus designed to be charged intermittently.
4. Juice-extracting apparatus designed to be charged continuously.
5. Valves and pipes for juice-extracting apparatus.
6. Closures for juice-extracting apparatus.
7. Screens, screen pipes, and the like for juice-extracting apparatus.
8. Expressing apparatus for sugar beets and cane.
9. Auxiliary devices for juice-extracting apparatus.
10. Separation of juice by means of lime and the like.
11. Purification of juice by means of chemicals in general. (Cf. gr. 2.)
12. Purification of juice by means of reducing or oxidizing agents.
13. Purification of juice by means of bone black and other filtering powders.
14. Purification of juice by electrolysis.
15. Saturation of juice by means of carbonic acid or sulfurous acid.
16. Sampling, measuring, and testing in connection with extraction of sugar.

## 89d. Treatment of Raw and Refined Sugar, Including Evaporating and Concentrating, But Exclusive of Evaporators, Concentrators, and Centrifugal Apparatus. (For the latter see 89e and 89f.)

1. Concentration and evaporation of juice. (Digesting processes, concentrating, 12a; evaporators, concentrators, 89e.)
2. Crystallizing sugar from the sirup (exclusive of rock candy, gr. 3; crystallization in general, 12c, 2).



**89d.—Continued.**

3. Making rock candy.
1. Miscellaneous operations for the treatment of raw sugar.
5. Whitening or cleansing sugar in centrifugal apparatus.
6. Whitening or cleansing sugar otherwise than in centrifugal apparatus.
7. Washing loose sugar crystals (in a series of steps, or by means of chemicals and purification).
8. Preparation of refined sugar in the form of sugar loaf.
9. Molding and pressing sugar.
10. Reintroduction of sugar wastes in the process of manufacture.
11. Drying sugar. (Cf. 82a.)

**89e. Evaporators, Pans.** (For use in sugar manufacture; for processes see 89d.)

1. Surface evaporators (spraying evaporators, plate-shaped evaporators, evaporators with rotary heating bodies).
2. Circulation evaporators, pans, and the like.
3. Multiple effect evaporators.
4. Heating bodies for evaporators.
5. Miscellaneous auxiliary apparatus for evaporators, including froth preventers, pipe cleaners, sirup traps, condensers and the like. (Cf. 12a, 1 and 2; 14g, 12-14.)

**89f. Centrifugal Apparatus for Extraction of Sugar and Starch.** (Centrifugal machines of general application, 82b.)

1. Centrifugal machines for cleansing sugar.
2. Centrifugal machines for molding sugar.
3. Continuously operating centrifugal machines for sugar.

**89f.—Continued.**

4. Apparatus in connection with centrifugal machines for separating sugar waste.
5. Miscellaneous centrifugal machines for sugar, exclusive of gr. 1-4; also auxiliary apparatus.

**89g. Sugar Cutting, Assorting and Packing Machines.**

1. Sugar-cutting machines.
2. Sugar assorting and packing machines.

**89h. Extraction of Sugar from Molasses.**

1. By means of osmosis.
2. By precipitation or separation of sugar lime.
3. By means of lime by the elution process.
4. By means of strontium.
5. By means of barium.
6. By means of lead oxide.
7. Miscellaneous processes for the treatment of molasses, exclusive of gr. 1-6.

**89i. Dextrose, Invert Sugar, Milk Sugar, Golden Sirup, and Maltose.**

1. Extraction of dextrose.
2. Extraction of invert sugar, milk sugar, golden sirup, and maltose.

**89k. Starch and Dextrine.** (See also class 22i.)

1. Comminuting raw materials for making starch.
2. Extraction and purification of starch.
3. Molding and drying starch.
4. Treatment of waste from the manufacture of starch.
5. Preparation of soluble starch and dextrine. (Adhesives, 22i.)





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Beds, invalid.....	30e	Cloth printing.....	8c, n
Bee culture.....	45h	Cloth, putting up.....	8f
Beer.....	6	Clutches.....	47c
Beer pumps.....	64c	Cocks and faucets.....	47g, 64c
Bellows.....	27a	Coffee roasters.....	82a
Belts, driving.....	47d	Coin handling.....	43a
Belt shifters.....	47d	Coke.....	10a
Beverages.....	6	Confectionery.....	53f, l
Bicycles.....	63f-i	Conveyers.....	81c
Blasting.....	78e	Cookers.....	34a
Bleaching.....	8	Coopering.....	38f
Blowers.....	27b	Counting mechanism.....	42p
Boats and buoys.....	65	Cranes.....	35b
Boilers.....	13	Cultivators.....	45a
Bookbinding.....	11	Cupboards.....	34i
Books.....	11	Curtains.....	34e
Boots and shoes.....	71	Cutlery.....	69
Bottles and jars.....	64a		
Bottle washers.....	64b	Dairy.....	45f
Boxes, barrels, etc.....	81c	Dentistry.....	30b
Braiding.....	25	Disinfecting.....	30i
Brakes and gins.....	29a	Docks, etc.....	65b
Brakes.....	47c	Dolls.....	77f
Brakes, cycle.....	63i	Door checks and closers.....	68d
Brakes, railway.....	20f	Doors.....	37d
Brakes, wagon.....	63b	Drafting.....	42a
Brick.....	80	Draft appliances.....	20e
Bridges.....	19d	Drilling, metal.....	49a
Brushes.....	9	Drilling wells.....	5a
Buildings.....	37	Drying.....	82
Burial apparatus.....	30e, 37f	Dust collectors.....	50e
Butchering.....	66	Dwelling equipment.....	34
Burners.....	4	Dyeing.....	8
Button making.....	39a, 44	Dyes.....	22
Buttons, etc.....	41a	Dynamometers.....	42k
Calculators.....	42m	Earthenware.....	80
Camp equipment.....	33d	Educational appliances.....	42n
Canes.....	33a	Electric controllers.....	21c
Cans and can closures.....	64a	Electric generators.....	21d

	Classes and subclasses.		Classes and subclasses.
Electric heating	21h	Inks	22g
Electric lighting	21f	Instruments	42
Electric measuring	21e	Iron, metallurgy	18
Electric motors	21d		
Electric railways	20k	Jewelry	44a
Electric switches	21c	Journal boxes	47a
Electrometallurgy	40c		
Electroplating	48a	Kilns, brick	80c
Electrotechnics	21	Kitchen utensils	31k
Elevators	35a	Knitting	25a
Embroidery	52b		
Engines, expansive fluid	46d	Labeling	81b
Engines, internal combustion	46	Lace	25
Engines, steam	14	Lathes, metal	49a
Engraving	75a	Lathes, wood	38b
Excavating	84d	Laundry	8d, i
Explosives	78	Leather	28
		Letter files	11c
Fans	27c	Life saving	61
Fans, toilet	33a	Life saving, marine	65a
Farriery	45i	Linoleum, etc.	8b, l
Felt	41	Liquids, dispensing	64
Fences	37d	Loading and unloading	81e
Fertilizer distributors	45b	Locks	68
Fertilizers	16	Lubrication	47e
Fiber and fabric treatment	8, 29, 76b		
Filters	12d	Machine elements	47
Fine arts	75	Mail boxes	34c, 81c
Fire alarms	74	Marine propulsion	65c, f
Firearms	72	Massage	30i
Fire escapes	61a	Matches	78a
Fire extinguishers	61a, b	Measuring	12
Fishing	45h	Meat treatment	66b
Fluid-pressure regulators	47g	Mechanical motors	46e
Foodstuffs	53	Medicines	30
Foundations	84c	Mercerizing	8a, k
Fruit seeders	45e	Metal coating	48b
Fuel	10	Metal founding	31
Furnaces	24	Metallurgy	40
Furniture	31	Metal working	7
		Metal working, chemical	48
Games and toys	77	Metal working, forging	49i
Garbage disposal	81d	Metal working, mechanical	49
Gardening	45f	Metal working, rolling	7a, f
Garment supporters	3b	Meters, volume	42c
Gases, liquefaction	17g	Mills and milling	50
Gas manufacture	26	Mining	5
Gas producers	24e	Mixers	50f
Gearing	47b	Mortar	80
Glass	32	Motor vehicles	63c
Glue	22i	Mowers	45c
Governors	60	Music	51
Grinding and polishing	67		
Gymnasium apparatus	77a	Nails	47a
		Navigation	65
Hammers	49e	Net making	25c
Hardware, builders'	68b, d	Nut locks	47a
Hardware, fancy	44		
Harness	56	Oils and fats	23
Harrows	45a	Optics	42h
Harvesters	45c	Ordnance	72c
Hats	41	Ore dressing	1
Hay presses	45e	Ornamentation	75
Heating and ventilation	36		
Hides	28	Packaging	81
Hinges	68c	Packaging liquids	64b
Hoisting	35	Packing	47f
Horn and ivory	39a	Painting	75
Horology	83	Paints	22
Horsepowers	45d	Paper cutters	11
Hydraulic engineering	84	Paper files and binders	11
Hydraulic motors	88	Paper making	55
		Paper manufactures	54
Ice	17b, c	Paving	19c
Illumination	4	Pens	70b



	Classes and subclasses.		Classes and subclasses.
Perambulators.....	63b	Stoves and ranges.....	36
Phonographs.....	42g	Stove utensils.....	34d
Photography.....	57	Straw cutters.....	45e
Pins, etc.....	44a	Street cleaning.....	19b
Pipes and hose.....	47i	Sugar and starch.....	89
Planters.....	45b	Surgery.....	30
Plastic block apparatus.....	80	Syringes, etc.....	30k
Plastics.....	39		
Plows.....	45a	Tables.....	34i
Pneumatic dispatch.....	81e	Table utensils.....	34i
Preserving animals and plants.....	45l	Tanning.....	28
Preserving foods.....	53	Targets, etc.....	72e
Preserving wood.....	38h	Telegraphy.....	21a
Presses.....	58	Telephony.....	21a
Printing.....	15	Tents.....	33d
Pulleys.....	47b	Testing.....	42k, l
Pumps.....	59	Textile fibers.....	29
Pumps, air.....	27b	Theater appliances.....	77g
Purses.....	33b	Thermometers.....	42i
		Thrashing.....	45e
Railways.....	19, 20	Tires.....	63e
Railways, rolling stock.....	20l	Tobacco.....	79
Railways, signals.....	20h, i	Tobacco users' appliances.....	44b
Railways, switches.....	20i	Toilet.....	33c, 34k
Railways, warehouse.....	81e	Tools.....	87
Recorders.....	43	Torpedoes.....	65d
Refrigerators.....	17	Trapping.....	45k
Registers.....	43	Travelers' equipment.....	33
Road building.....	19	Trimmings.....	25c
Roofs.....	37c	Trunks.....	33b
Ropes.....	73	Tube making.....	7b
Roundabouts.....	77e	Tube working.....	7c
Rubber.....	39	Tunnels.....	19f
		Type.....	15a
Saddlery.....	63	Typewriters.....	15g
Sales.....	68e		
Saws, metal.....	49b	Umbrellas.....	33a
Saws, wood.....	38a	Undertaking.....	30e, i
Seafields.....	37e		
Scales.....	42i	Valve gears.....	14d, i
School desks.....	34i	Valves.....	47g
Screws.....	47a	Vegetable cutters and crushers.....	45e
Seeders (drills, etc.).....	45b	Velocipedes.....	53f-i
Sewers.....	85e	Venders, automatic.....	43b
Sewing machines.....	52a	Ventilation.....	36
Shaft couplings.....	47c	Vinegar.....	6e
Shears.....	69	Vises.....	87a
Shears, metal.....	49b		
Ships.....	65	Water-closets.....	85h
Ships, lifting of.....	84b	Watering.....	45f
Sifters.....	50d	Water purification.....	85
Signaling.....	74	Water supply.....	85
Signaling, marine.....	65a	Water wheels.....	88a
Skates.....	77b	Weaving.....	86
Sleds.....	63b	Wheels, vehicle.....	63d
Soaps.....	23e, f	Winding, yarn, etc.....	76d
Soldering.....	49f	Windmills.....	88c
Speed measures.....	42o	Windows.....	37d
Spinning.....	76	Wire making.....	7b
Stamps, hand.....	15h	Wire, working.....	7d
Stationery.....	70	Woodworking.....	38
Steam.....	13	Wool washing.....	76a
Stock feed.....	53g	Writing implements.....	70
Stone working.....	80d		
Stoppers.....	64a	Yeast.....	6a
Store furniture.....	34l		





